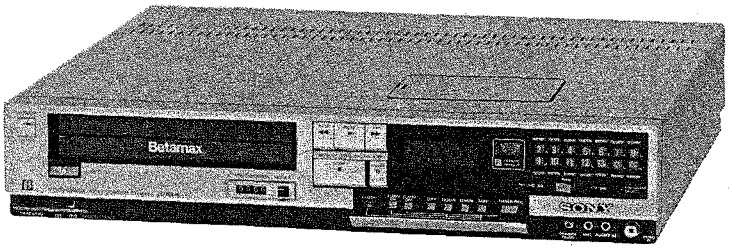
SL-2400
RMT-314

SERVICE MANUAL

US Model
E Model
PX Model

REVISED



August, 1983

711B CHASSIS

Refer to separate adjustment manual, Part number 9-972-230-11

SPECIFICATIONS

System

Video recording system	Rotary two-head helical scanning
Video signal	EIA standards, NTSC color
Channel coverage	VHF channels 2 - 13 UHF channels 14 - 83
VHF output signal	Channel 3 or 4 (selectable) 75 ohms, unbalanced
Antenna	75-ohm external antenna terminal for VHF 300-ohm external antenna terminals for UHF

Video

Input	VIDEO IN : phono-type connector 1.0 V (p-p), 75 ohms, unbalanced, sync negative
Output	VIDEO OUT : phono-type connector 1.0 V (p-p), 75 ohms, unbalanced, sync negative
Signal-to-noise ratio	Better than 45 dB

Audio

Input	AUDIO IN : mini jack 100 k ohms, −10 dBs (0 dBs = 0.775 V rms) MIC : mini jack −60 dBs, suitable for microphone with 600-ohm impedance
Output	AUDIO OUT : mini jack Less than 10 k ohms, −5 dBs (100 k ohms load), unbalanced
Frequency response	βII : 50 - 12,000 Hz βIII : 50 - 9,000 Hz
Signal-to-noise ratio	Better than 40 dB

Tape transport

Tape speed	βI : 4.0 cm/sec. (playback only) βII : 2.0 cm/sec. βIII : 1.33 cm/sec.
Maximum recording time	βII : 3 hours 20 min. βIII : 5 hours (with Sony L-830 cassette)
Fast forward time	Under 4 min. (L-500)
Rewind time	Under 4 min. (L-500)

Timer

Clock	Synchronized with the power frequency
Time indication	12-hour cycle
Timer setting	Only for recording 1 event/ 3 days

General

Power requirements	Type 1 : 120 V ac ±10%, 60 Hz ±0.5% Type 2 : 120 V ac ±10%, 50/60 Hz ±0.5% Type 3 } 120/220 V ac ±10%, 50/60 Hz Type 4 } ±0.5%
Power consumption	39.5 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +65°C (−4°F to +149°F)
Dimensions	Approx. 430 × 80 × 385 mm (w/h/d) (17 × 3¼ × 15¼ inches) incl. projecting parts and controls
Weight	Approx. 9.6 kg (21 lb 3 oz)

– Continued on next page –

Beta
β VIDEO CASSETTE RECORDER

SONY®

MICROFILM

Remote Commander

Remote control system	Infrared control
Power requirements	3 V dc, 2 size AA batteries (IEC designation R6)
Dimensions	Approx. 65 × 20 × 153 mm (w/h/d) ($2\frac{5}{8} \times \frac{13}{16} \times 6\frac{1}{8}$ inches)
Weight	Approx. 140 g (5 oz) incl. batteries

Accessories supplied

Betamax video cassette tape (1)
EAC-24 external antenna connector (75-ohm to 300-ohm matching transformer) (1)
EAC-25 external antenna connector (300-ohm to 75-ohm matching transformer) (1)
75-ohm coaxial cable with F-type connectors 2 m (6 feet) long (1)
300-ohm twin lead 2 m (6 feet) long (1)
Remote Commander RMT-314 with two size AA batteries (1)
Channel indicating segments (1 set)
AC plug adaptor (1) (for the type 3 model)

Optional accessories

Betamax video cassette tape L-250, L-500, L-750, L-830, etc.
Video head cleaning cassette L-25CL
Color video camera HVC-2000, HVC-2200, HVC-2400, HVC-2500, HVC-2800
AC adaptor for the camera HVA-200

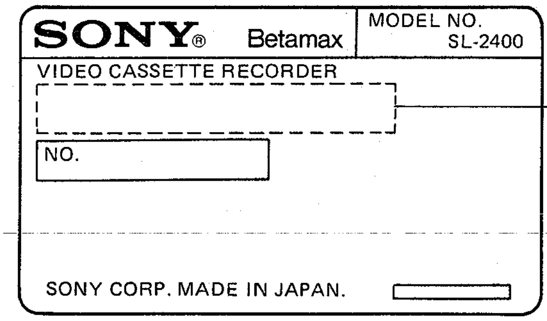
Design and specifications subject to change without notice.

Type	Area where the model is available	Voltage	Frequency
1	USA	120 V	60 Hz
2	Central/South America (except for chile)	120 V	50/60 Hz
3	PX	120/220 V	50/60 Hz
4	Other countries	120/220 V	50/60 Hz

* * *

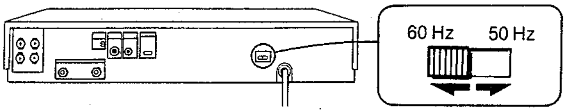
MODEL IDENTIFICATION

– **Specification Label** –



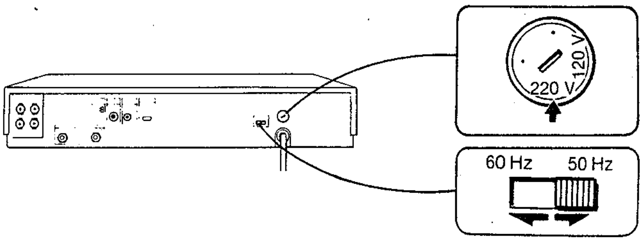
AC 120V 60 Hz 39.5W .... US model (TYPE 1)
AC 120V 50/60 Hz 39.5W .... E2 and PX2 models **(TYPE 2)**
AC 120V/220V 50/60 Hz 39.5W ...... E1 and PX1 models **(TYPE 3, 4)**

- US model (TYPE 1) operate on 120 V ac, 60 Hz.
- E2 and PX2 models **(TYPE 2)** operate on 120 V ac, 50/60 Hz. Before connecting the unit to the power source, set the frequency select switch at the rear to the appropriate position, as indicated below.



● E1, PX1 Model (TYPE 3, 4)

Before connecting the unit to the power source, **be sure to check that the voltage selector at the rear is set to 220 V when using the unit in the 220 V area.**



SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

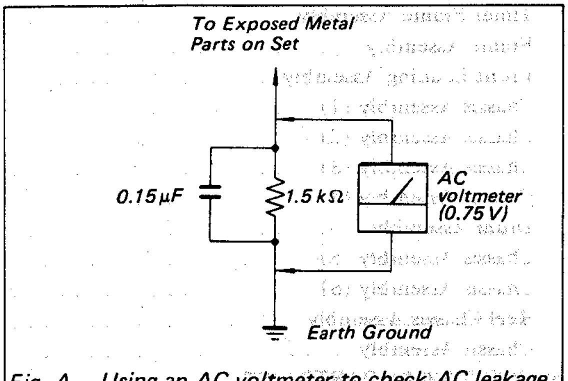


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

TABLE OF CONTENTS

Section Title Page

1. GENERAL

1-1. Location and Function of Controls 14
1-2. Antenna Connections 16
1-3. Connecting the TV Receiver 17
1-4. Connections to a Cable TV (CATV) System 18
1-5. Watching Television 18
1-6. Adjusting the TV 19
1-7. To Set up and Fine-Tune the VHF and UHF Channels in Your Area 20
1-8. Setting the Clock 21
1-9. How to Record TV Programs 22
1-10. How to Playback a Recorded Tape 23
1-11. Timer-Activated Recording 24
1-12. Camera Recording 26
1-13. Remote Control Operation 27
1-14. Closed Caption Recording and Playback 29
1-15. Tape Copy 29
1-16. PCM Recording and Playback 29
1-17. Disassembly 30
  1-17-1. Removal of Cabinet 30
  1-17-2. Assembly of Timer Door Ass'y 31
  1-17-3. Removal of SS-13 Board 31
  1-17-4. Removal of TA-12 Board 32
  1-17-5. Removal of RP-8 Board 32
  1-17-6. Removal of Power Block (PS-19, PS-20) 33
  1-17-7. Removal of TS-23 Board 33
  1-17-8. Removal of Reel Ass'y 34
  1-17-9. Removal of FL Cassete Compartment Ass'y 34
  1-17-10. Removal of Loading and Threading Motors (M904) 35
  1-17-11. Removal of Mechanical Chassis Block 35
1-18. How to Operate Transport without Cassette 36
1-19. Loading and Unloading During Power OFF 37
1-20. Threading and Unthreading During Power OFF 37
1-21. Internal Views 38
1-22. Board Arrangement 41
1-23. Configuration of Main Boards and Application of ICs 42

2. BLOCK DIAGRAM

Overall Block Diagram 45
Video Block Diagram 47
Servo Block Diagram 50
System Control Block Diagram (1) <Former> 55
System Control Block Diagram (1) <New> 57
System Control Block Diagram (2) 59
Loading, Threading Timing Chart 60
Timing Chart in Each Mode After Completion of Threading 61
Tuner/Audio Block Diagram <Former> 69
Timer Block Diagram <New> 71
Timer Block Diagram 73
Power Supply Block Diagram 75

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

Frame Schematic Diagram 79
YC-22, RP-8 Board 83
SS-13 Board, GM-2 Board, FS-19 Board, FS-20 Board, FS-21 Board, PS-25 Board, Reel Motor Board, Capstan Motor Board, TS-24 Board, LM-8 Board, JK-1 Board, RD-5 Board, DS-3 Board, CS-4 Board, N Board <Former> 92
SS-13 Board, FS-19 Board, FS-20 Board, FS-21 Board, PS-25 Board, Reel Motor Board, Capstan Motor Baord, TS-24 Board, LM-8 Board, JK-1 Board, RD-5 Board, CS-3 Board, CS-4 Board, N Board <New> 102
TA-12, TU-36, TS-23, JK-1 Board <Former> 112
TA-20, TU-54, TS-23, JK-1 Board <New> 122
PS-19, PS-20, PS-21, TS-23, TS-24 Board 131
GM-2, Capstan Motor, TA-12 or TA-20 Board 139

4. EXPLODED VIEW

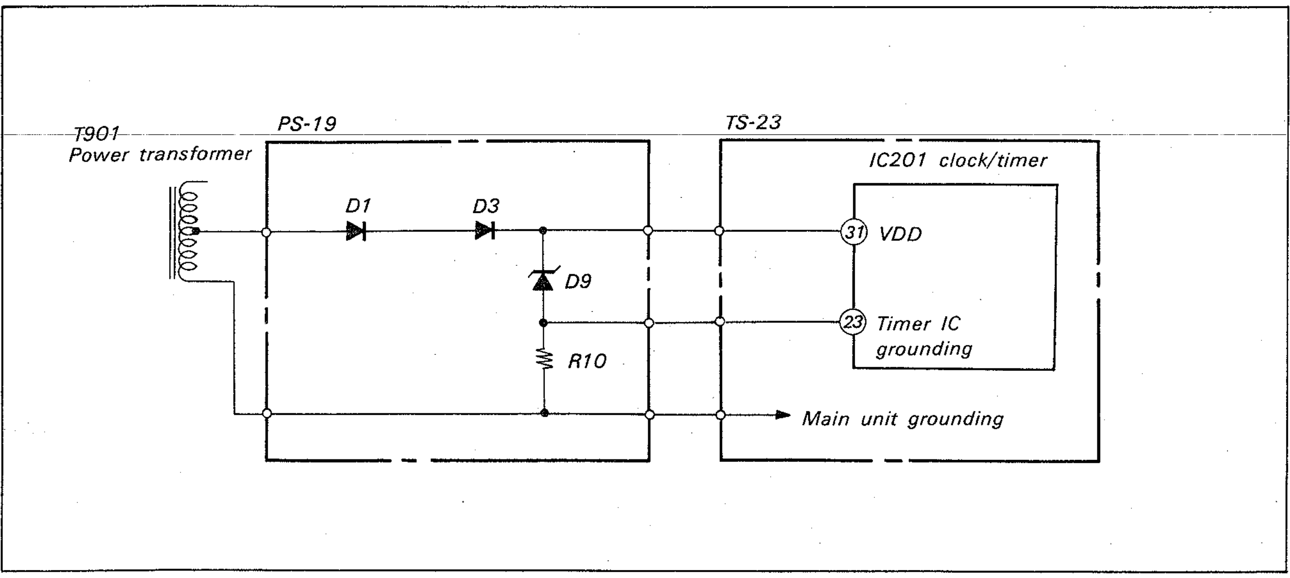
Cabinet Assembly 143
Front Panel Assembly 144
Power Block Assembly 145
Timer Frame Assembly 146
Frame Assembly 147
Front Loading Assembly 148
Chassis Assembly (1) 149
Chassis Assembly (2) 150
Chassis Assembly (3) 151
Chassis Assembly (4) 152
Drum Assembly 153
Chassis Assembly (5) 154
Chassis Assembly (6) 155
Reel Chassis Assembly 156
Chassis Assembly 157
5. ELECTRICAL PARTS LIST 159
RMT-314 (REMOTE CONTROL UNIT) 185

OUTLINE

- Slim, easy-to-handle videocassette recorder, with a thickness of 8 cm
- Front loading
  Can be set at any place.
- Automatic rewind
  Automatically rewound at tape end in the REC and PB modes.
- Batascan/Bata SkipScan
  Can be quickly picture-searched during PB, FF and REW.
- Can be operated using a wireless remote controller.
- When the unit enters the REC mode with the broken safety tab of a cassette, the cassette is automatically unloaded.

[Precautions on repairing]

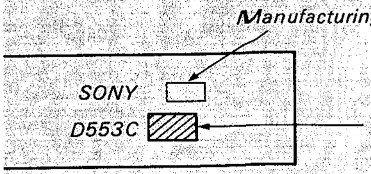
Be careful not to short-circuit between the timer IC grounding and main unit grounding (chassis).
The timer B + power supply (5V DC) are obtained at both ends of a Zener diode D9, and there is a potential difference of approx. 14.5V DC between the timer IC grounding and main unit grounding. Shorting-circuit between them may damage the timer IC (IC201).


T901
Power transformer
PS-19
D1
D3
D9
R10
TS-23
IC201 clock/timer
31 VDD
23 Timer IC grounding
Main unit grounding

autions on replacement of IC401 and IC402]

ystem control ICs (IC401 and IC402 on the SS-13 board) two sorts of (new and former) parts for repairing. For parts, new parts are supplied the monent the former parts hausted.

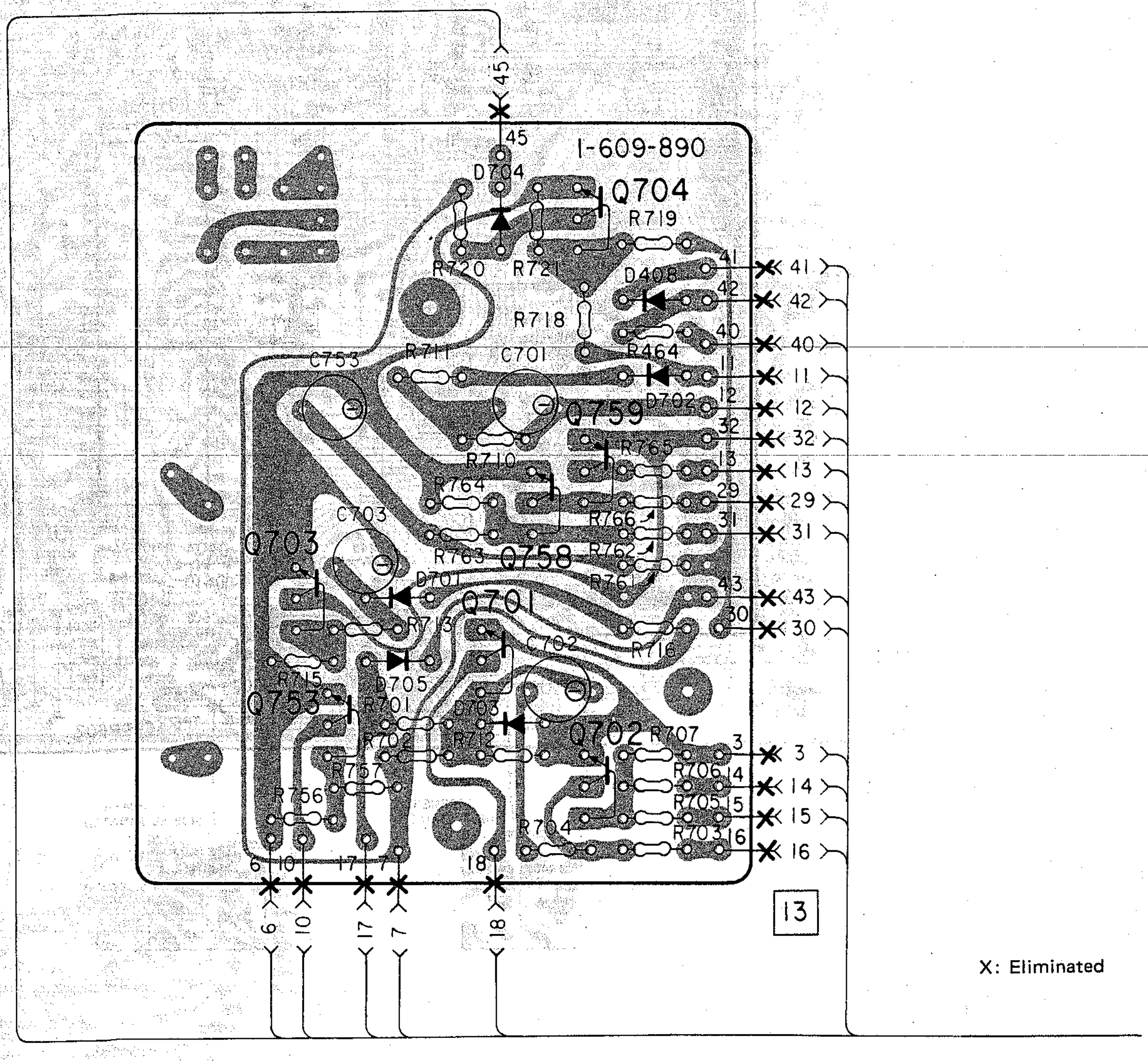
replacing with new parts, IC401 and IC402 should be ed together. Also, a part of the circuit should be modified own below.


Manufacturing No.
SONY
D553C

	FORMER	NEW
IC401	μPD553C-261	μPD553C-276
IC402	μPD553C-262	μPD553C-287

fied points:

iminate the GM-2 board.

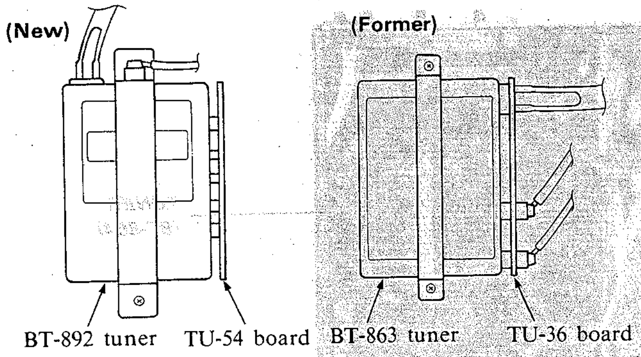

1-609-890
45
Q704
R719
D704
R720
R721
D408
R718
R464
R711
C701
C753
D702
Q759
R765
R710
R764
C703
R766
R762
Q703
R763
Q758
R761
D701
Q701
R713
C702
R716
R715
D705
Q753
R701
D703
R702
R712
Q702
R707
R706
R757
R705
R756
R704
R703
41
42
40
11
12
32
13
29
31
43
30
3
14
15
16
6
10
17
7
18
13

X: Eliminated

[Note on Replacement of Tuners (BT846 and BT892)]

There are new and former types in the tuners. The single parts of the tuner have no compatibility between the new and former parts. For the single parts of the tuner, the new and former parts should be provided.

New and former tuners:


(New)
(Former)
BT-892 tuner
TU-54 board
BT-863 tuner
TU-36 board

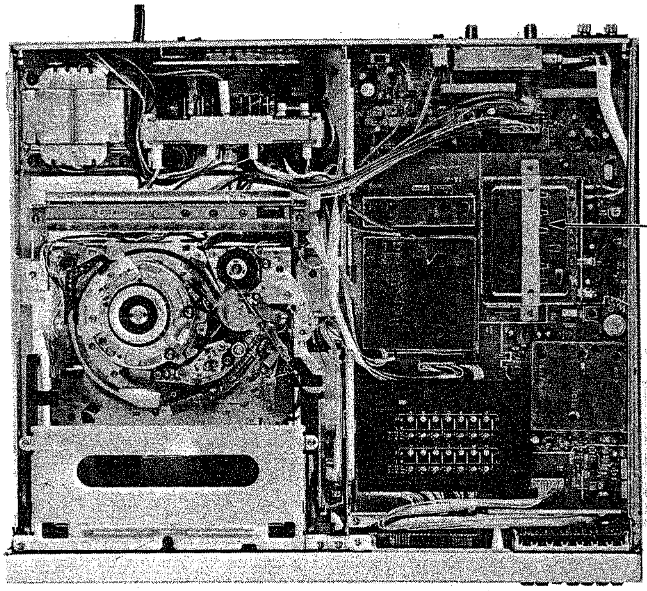
New	Former
Tuner (BT-892)	Tuner (BT-864)
TA-20 board	TA-12 board
TU-54 board	TU-36 board

Note:
The single parts of a tuner have no compatibility between the new and former tuners.
(For the single parts of a tuner, new and former parts are required.)

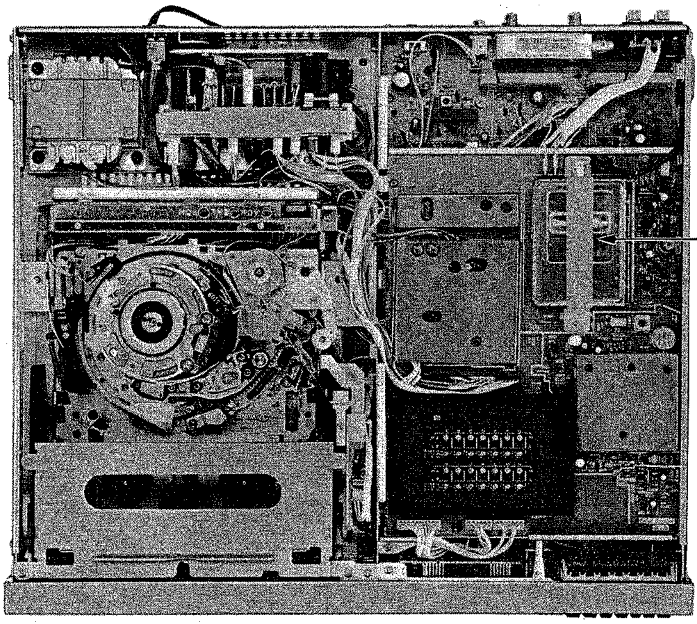
INTERNAL VIEWS

– TOP SIDE –

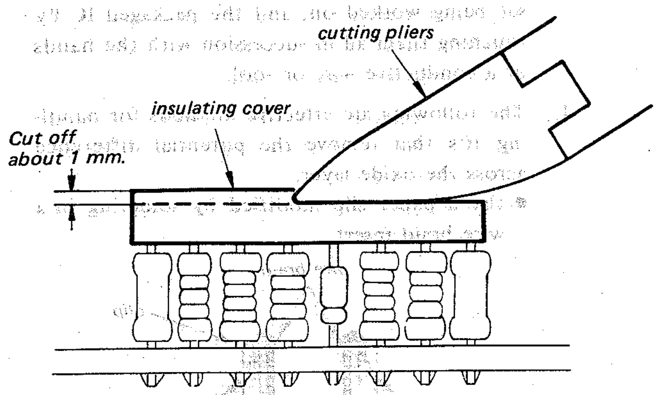
FORMER

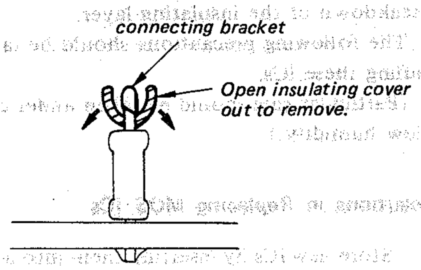

TUNER
(BT-864)

NEW

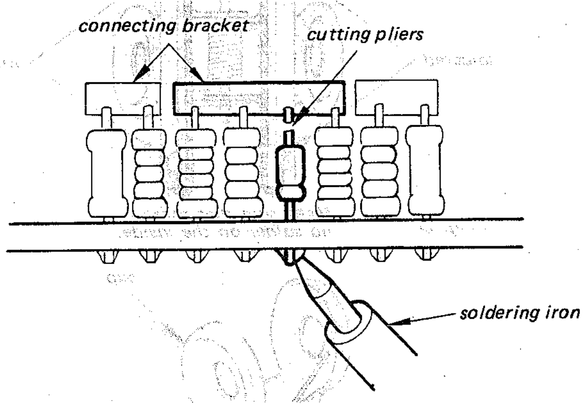

TUNER
(BT-892)

REPAIR METHOD FOR HYBRID CIRCUIT BLOCK

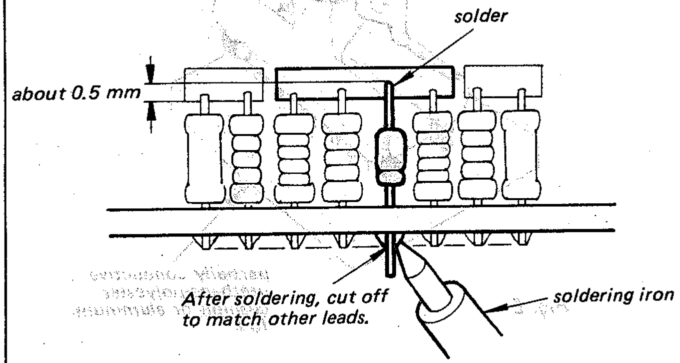

cutting pliers
insulating cover
Cut off about 1 mm.


connecting bracket
Open insulating cover out to remove.

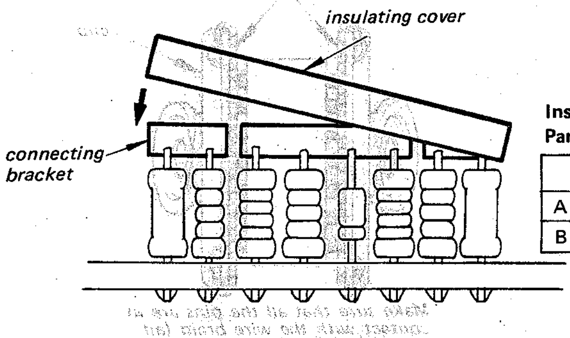
Using a cutting pliers, cut off the upper portion of the insulating cover about 1 mm, exposing the top of the connecting brackets.


connecting bracket
cutting pliers
soldering iron

Cut off the lead of the defective part with cutting pliers. Remove solder and take out the defective part.


solder
about 0.5 mm
After soldering, cut off to match other leads.
soldering iron

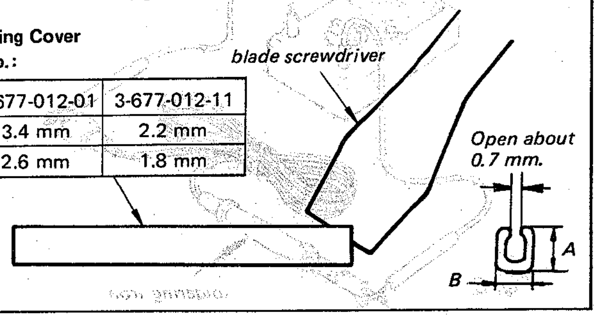
Insert the new part on the board and solder the lead to the board. Cut off the lead on the connecting bracket side so that it overlaps by about 0.5 mm, and solder to the connecting bracket.


insulating cover
connecting bracket

Open the insuiating cover groove about 0.7 mm and place over the connecting brackets, positioning one end first.

Insulating Cover Part No.:

	3-677-012-01	3-677-012-11
A	3.4 mm	2.2 mm
B	2.6 mm	1.8 mm


blade screwdriver
Open about 0.7 mm.
A
B

Handling Precautions for MOS ICs

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential.
   (The ICs should be stored in that manner until mounted on the circuit board.)

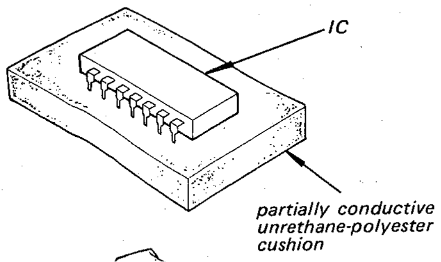

IC
partially conductive unrethane-polyester cushion

Fig. A

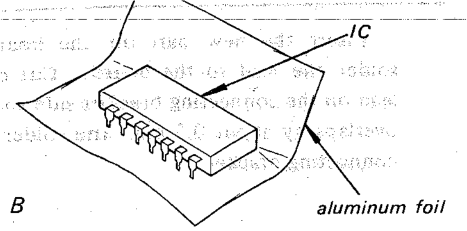

IC
aluminum foil

Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

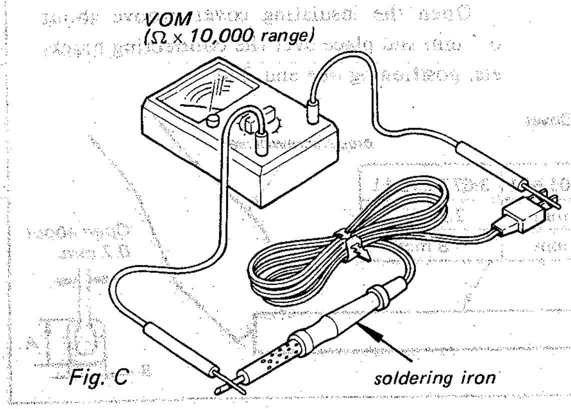

VOM
(Ω x 10,000 range)
soldering iron

Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
   - Use a paper clip modified by soldering in a wire braid insert.

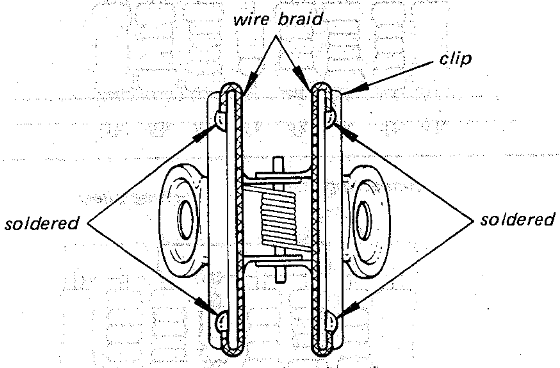

wire braid
clip
soldered
soldered

Fig. D Make sure that there is no solder on the inside.

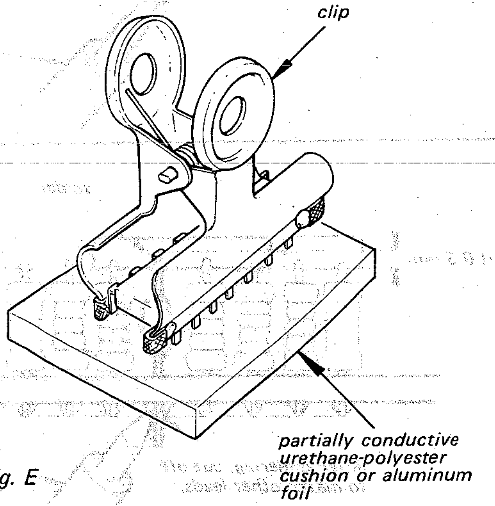

clip
partially conductive urethane-polyester cushion or aluminum foil

Fig. E

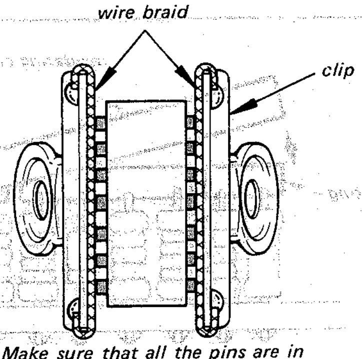

wire braid
clip

Fig. F Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

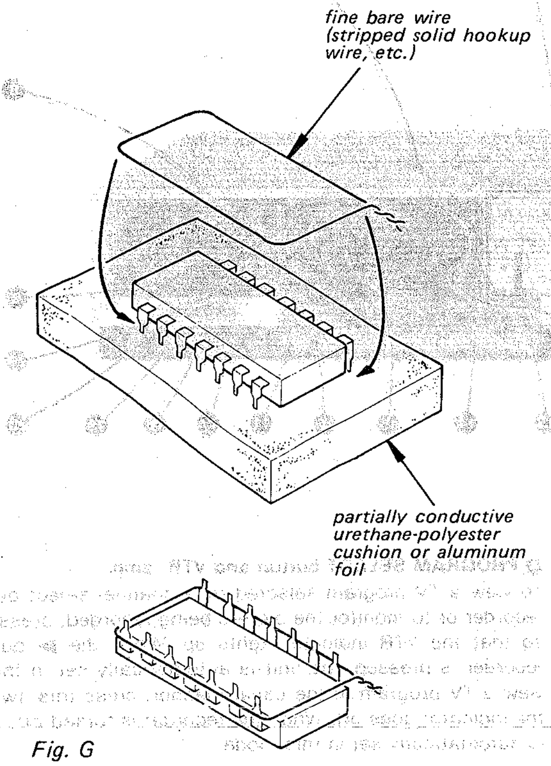

fine bare wire (stripped solid hookup wire, etc.)
partially conductive urethane-polyester cushion or aluminum foil

Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

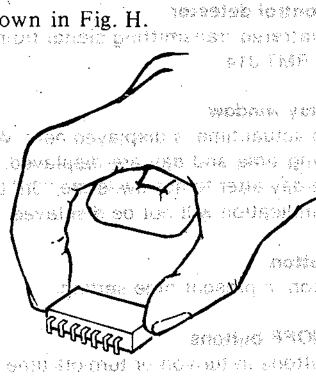


Fig. H

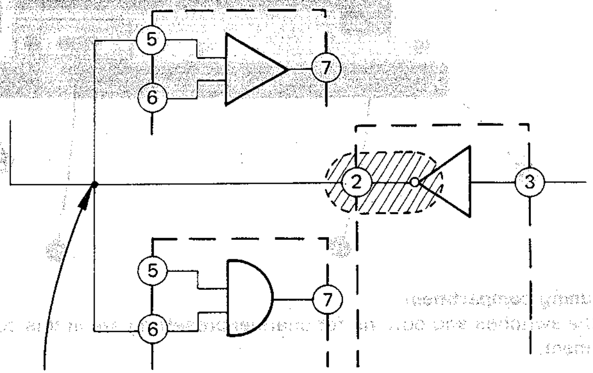
5. Method of Mounting
Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.) Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B– voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:

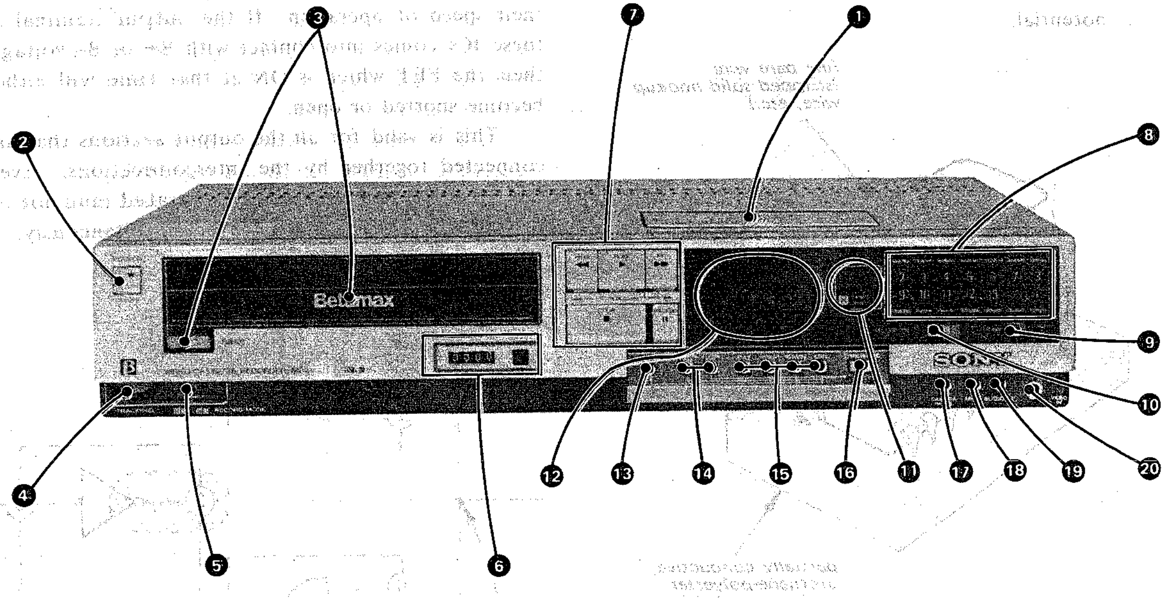


If this line is grounded, or touches B+ or B– bus . . . , the output stage of this IC will be destroyed.

Fig. I

SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS



❶ Tuning compartment
All the switches and buttons for channel presetting are in this compartment.

❷ POWER switch and lamp
Press to turn the power on. The lamp lights up.
To turn the unit off, press the switch again.
The timer section will continue to operate and the time will be displayed even if the power switch is off, as long as the ac power cord is plugged into a working outlet.

❸ Cassette compartment and ⏏ EJECT button
After turning on the recorder, insert a cassette to be recorded or played back. To remove the cassette, press the ⏏ EJECT button.

❹ TRACKING control
The center detent position provides the correct tracking for the cassettes recorded on this recorder.
If streaks or snow appears in the playback of a cassette which has been recorded on another video cassette recorder, turn this knob to obtain the best possible picture.

❺ RECORD MODE selector
Select either βII or βIII to set the recording speed. In playback, βI, βII or βIII mode is automatically selected.

❻ TAPE COUNTER and RESET button
The TAPE COUNTER provides a numerical reference point while recording, which can be used to index a recorded cassette.
To reset the counter to zero, press the RESET button.

❼ Function buttons
Control tape transport.

❽ Channel select buttons and indicators
Select the channel to be recorded or to be viewed with these buttons. The selected channel number will light.

❾ PROGRAM SELECT button and VTR lamp
To view a TV program selected by a channel select button on the recorder or to monitor the picture being recorded, press this button so that the VTR indicator lights up. When the ▶ button on the recorder is pressed, the unit is automatically set in this mode. To view a TV program in the usual manner, press this switch so that the indicator goes off. When the recorder is turned off, the recorder is automatically set in this mode.

❿ RECORD switch and lamp
Slide to the right to start recording. While a recording is being made, the lamp lights up.

⓫ Remote control detector
Detects the infrared transmitting signal from the supplied Remote Commander RMT-314.

⓬ Time display window
Normally the actual time is displayed here. While the timer is being set, the setting time and day are displayed. Tomorrow is the "2nd Day" and the day after tomorrow is the "3rd Day". For today's timer setting, day indication will not be displayed.

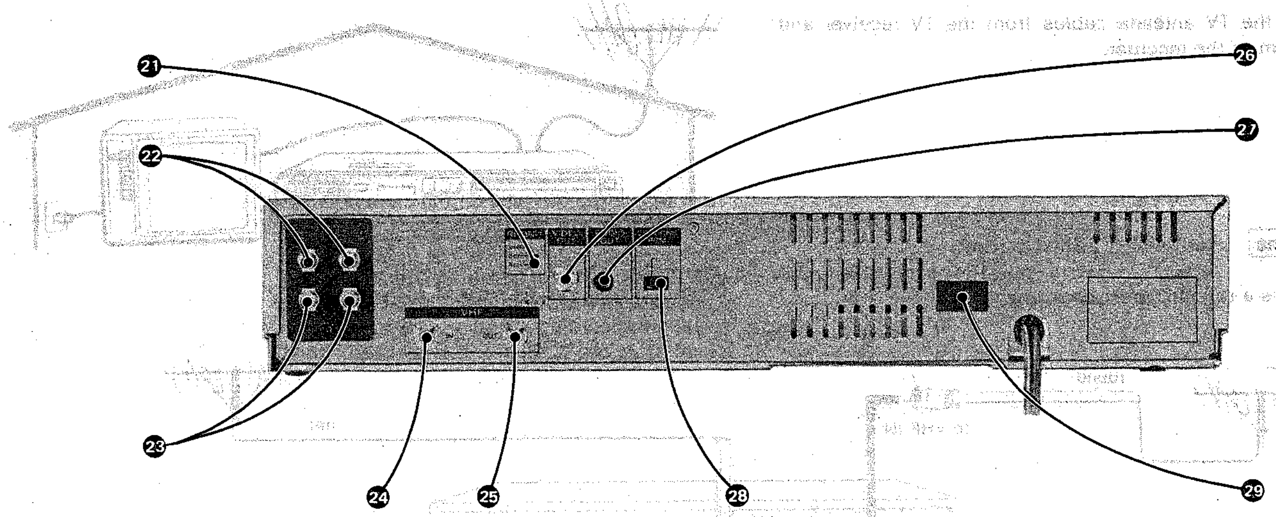
⓭ CLOCK button
Use this button in present time setting.

⓮ TURN ON/OFF buttons
Use these buttons in turn-on or turn-off time setting.

⓯ DAY, HOUR, 10 MIN, MIN buttons
Use these buttons in turn-on day and time or turn-off time settings while pressing the TURN ON or OFF button.

⓰TIMER REC button and indicator
Press for timer-activated recording. While the timer is in operation, the indicator lights.

Rear (Photo of the US model)



⑰ CAMERA PAUSE jack (special mini type)
To start or stop the tape on the camera, connect the Sony HVA-200 ac adaptor to this jack.

⑱ MIC (microphone) jack (mini type)
Connect a microphone or the MIC OUT plug of the ac adaptor here for audio recording. When a microphone is connected, neither the sound from the AUDIO IN jack nor the sound of a TV program can be recorded.

⑲ AUDIO IN jack (mini type)
This jack accepts audio signals. Connect it to the line output of a piece of audio equipment, such as an amplifier, tape recorder, etc., or to the audio output of another video recorder or a camera. When the plug is inserted in this jack, the signal from the TV tuner cannot be recorded.

⑳ VIDEO IN jack (phono type)
This jack accepts video signals from a camera, another video recorder etc. When the plug is inserted in this jack, the signal from the TV tuner cannot be recorded.

㉑ RF UNIT selector
Select the output channel at the VHF OUT terminal. Set the switch to 3ch or 4ch, whichever is not active in your area.

㉒ UHF IN terminals
Connect a UHF TV antenna here.

㉓ UHF OUT terminals
Connect to the UHF antenna terminals of the TV receiver to be able to view UHF TV programs even when the recorder is turned off.

㉔ VHF IN terminal
Connect a VHF TV antenna here.

㉕ VHF OUT terminal
Connect to the VHF antenna terminal of the TV receiver. The signal of a VTR program (converted to channel 3 or 4) and the VHF TV signal will be supplied to the TV receiver.

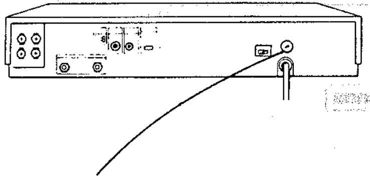
㉖ VIDEO OUT jack (phono type)
This jack provides the video signal from this recorder.
Connect it to the video input of another video recorder or a video monitor.

㉗ AUDIO OUT jack (mini type)
This jack provides the audio signals from this recorder.
Connect it to the line input of an audio equipment, such as an amplifier, tape recorder, etc., or to the audio input of another video recorder or a video monitor.

㉘ CAPTIONS/PCM switch
Normally set to the right position. For receiving captioned TV programs or for PCM recording and playback, set this switch to the left position.

㉙ Frequency select switch (capped on the US model: TYPE 1)
Set to either 50 Hz or 60 Hz in order to match the local power supply.

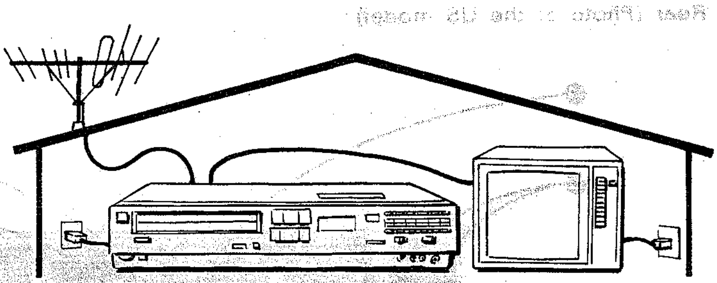
E1, PX1 Model (TYPE 3, 4)



Voltage selector
This selector is preset at the factory to 220 V.
When you use this recorder in a 120 V area, set the selector to 120 V.

-2. ANTENNA CONNECTIONS

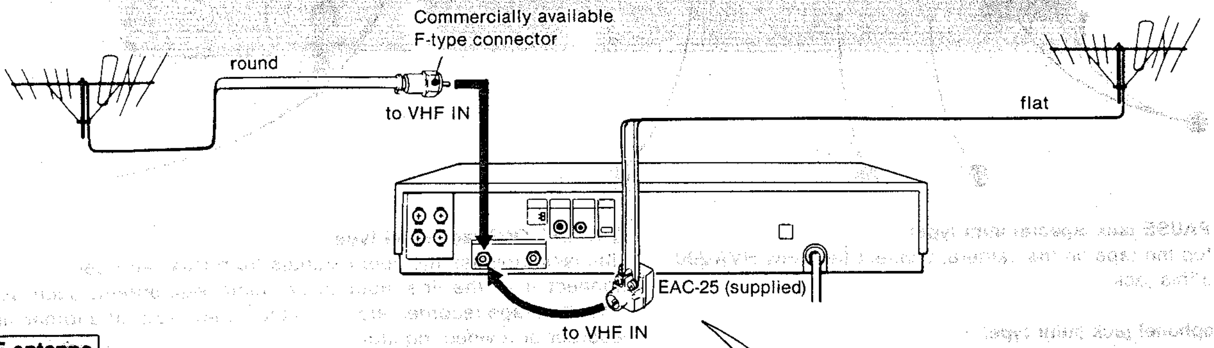
isconnect the TV antenna cables from the TV receiver and onnect them to the recorder.



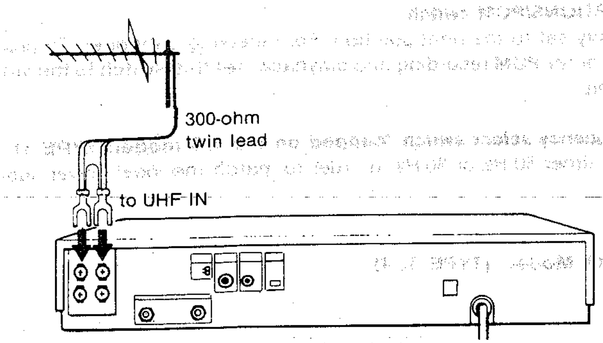
VHF antenna

f the cable is a round 75-ohm coaxial cable

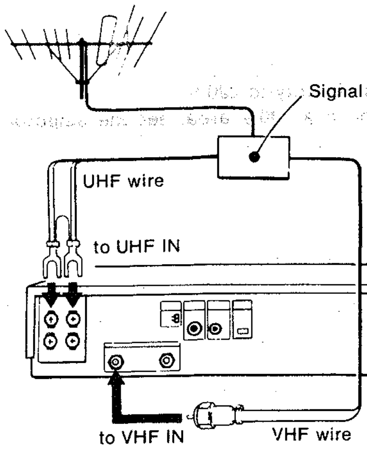
If the cable is a flat 300-ohm twin lead


Commercially available
F-type connector
round
to VHF IN
flat
EAC-25 (supplied)
to VHF IN

UHF antenna

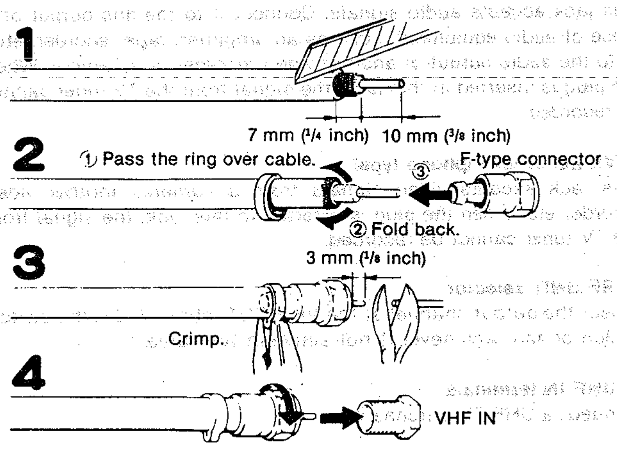

300-ohm
twin lead
to UHF IN

Combination VHF/UHF antenna

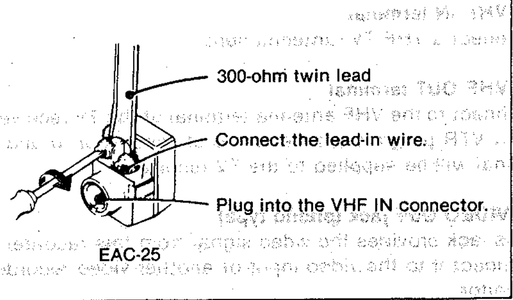

Signal splitter
UHF wire
to UHF IN
to VHF IN
VHF wire

Most combination antennas are equipped with a signal splitter.
If you need a splitter or a complete antenna system, see your Sony dealer or a qualified technician.

How to attach an F-type connector


1
7 mm (1/4 inch)
10 mm (3/8 inch)
2
① Pass the ring over cable.
③
F-type connector
② Fold back.
3
3 mm (1/8 inch)
Crimp.
4
VHF IN

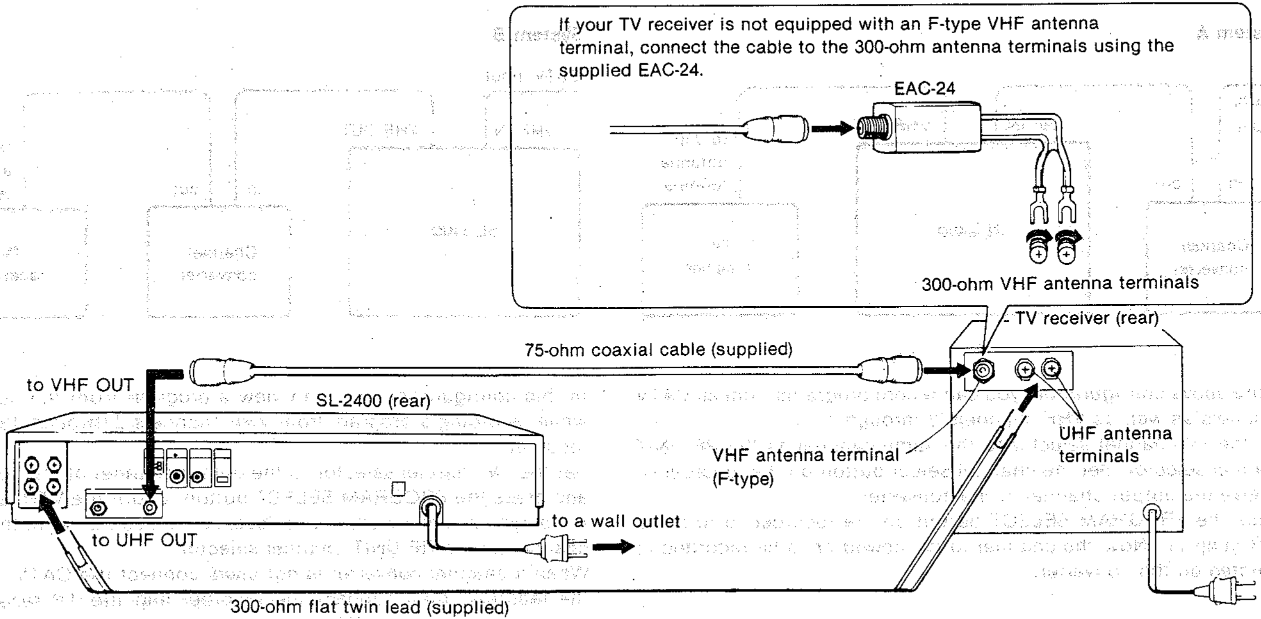
How to attach an EAC-25 external antenna connector


300-ohm twin lead
Connect the lead-in wire.
Plug into the VHF IN connector.
EAC-25

1-3. CONNECTING THE TV RECEIVER

Connecting a conventional TV receiver
Once the connections shown below have been made, the TV antenna signals, as well as the signal from the recorder, will be fed to the TV and you can view TV programs in the usual way.

- Use an optional RFC-8 extension cable, 8 m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.


If your TV receiver is not equipped with an F-type VHF antenna terminal, connect the cable to the 300-ohm antenna terminals using the supplied EAC-24.

EAC-24
300-ohm VHF antenna terminals
TV receiver (rear)
75-ohm coaxial cable (supplied)
to VHF OUT
SL-2400 (rear)
VHF antenna terminal
(F-type)
UHF antenna
terminals
to a wall outlet
to UHF OUT
300-ohm flat twin lead (supplied)

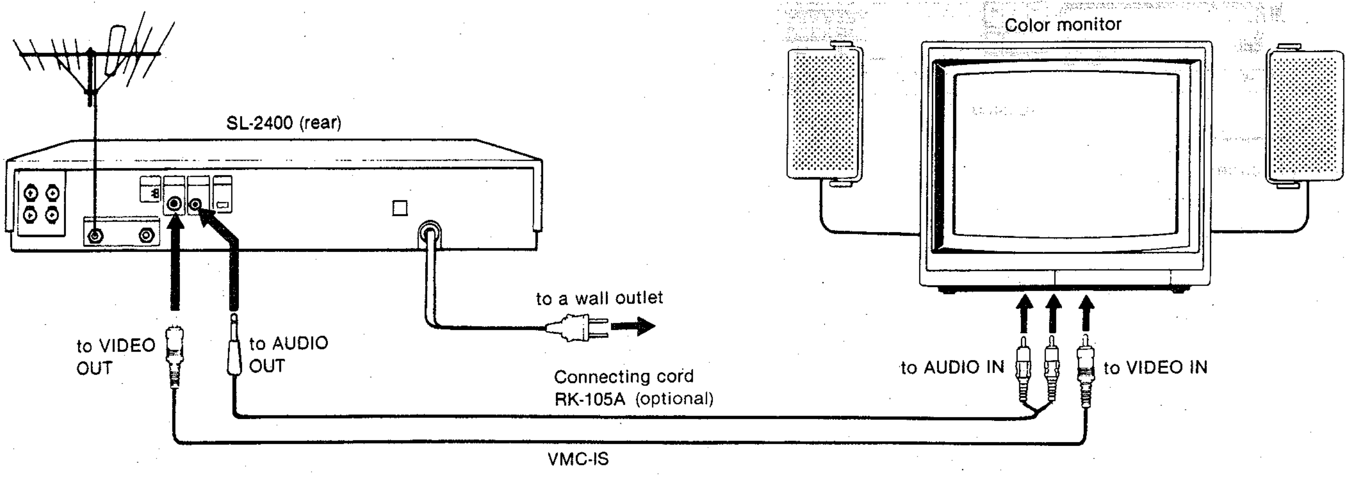
Caution

Connections between the recorder VHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of rf devices.

Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

Connecting a color monitor
To obtain a better-quality picture, connect a color monitor, such as the Sony Profeel Trinitron Component TV, instead of a conventional TV receiver.

If you use a component TV tuner together with the monitor, connect the recorder and the TV tuner in the same way as in the case of the recorder and the conventional TV receiver described above.
For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.



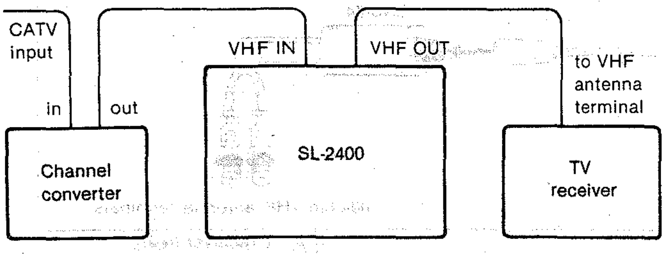
Color monitor
SL-2400 (rear)
to a wall outlet
to VIDEO
OUT
to AUDIO
OUT
Connecting cord
RK-105A (optional)
to AUDIO IN
to VIDEO IN
VMC-IS

1-4. CONNECTIONS TO A CABLE TV (CATV) SYSTEM

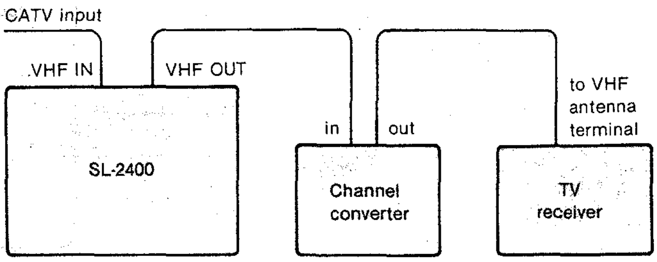
- We recommend that you consult with your cable television company for proper connection of your Betamax unit to your cable TV system.
- Before operating the recorder with a cable TV system, set the RF UNIT channel selector on the recorder to channel 3 or 4, whichever is not active in your area.

f both channels are viewable, check which gives better results by switching between channels 3 and 4.

System A


CATV input
in
out
Channel converter
VHF IN
VHF OUT
SL-2400
to VHF antenna terminal
TV receiver

System B

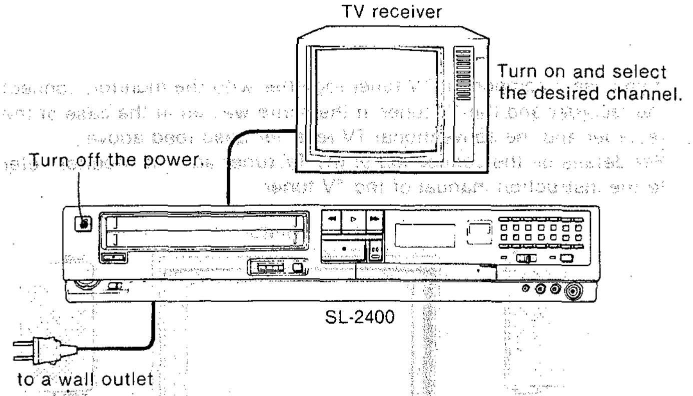

CATV input
VHF IN
VHF OUT
SL-2400
in
out
Channel converter
to VHF antenna terminal
TV receiver

In the above configuration, you can record programs from all CATV channels as well as VHF channels 2 through 13.
Set the TV channel selector to the same channel as the RF UNIT channel selector. Set the channel select button on the recorder to receive the output channel of the converter.
Press the PROGRAM SELECT button on the recorder to turn the VTR lamp on. Now the channel to be viewed or to be recorded is selected on the converter.

In this configuration, you can view a program from the converter while recording a program from VHF channels 2 through 13 via the recorder.
Set the TV channel selector to the output channel of the converter and press the PROGRAM SELECT button to turn the VTR lamp off.
For playback, set the channel selector on the converter to the same channel as the RF UNIT channel selector.
When a channel converter is not used, connect the CATV input to the recorder, then connect the recorder and the TV receiver as shown in the previous TV connection diagrams.

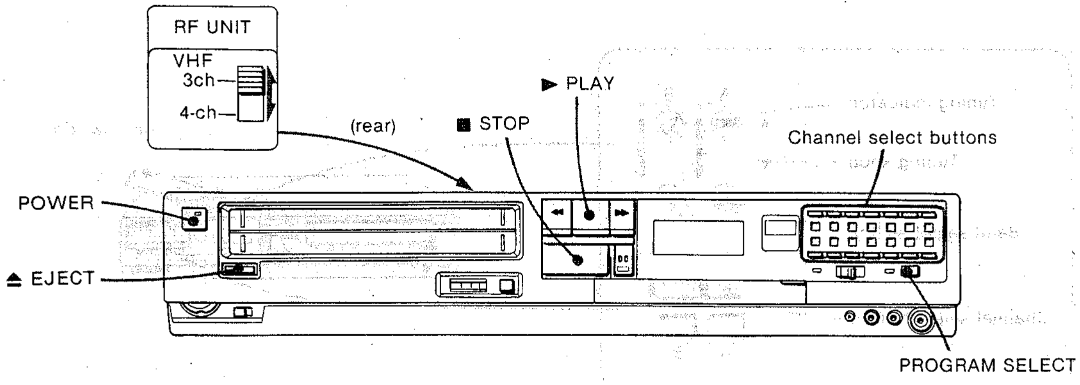
1-5. WATCHING TELEVISION

You can watch television in the usual way with the recorder connected.


TV receiver
Turn on and select the desired channel.
Turn off the power.
SL-2400
to a wall outlet

1-6. ADJUSTING THE TV

Adjust your TV receiver to receive the signal from your recorder. When you have connected a color monitor, the following adjustment is not necessary.



If you do not have a recorded video cassette tape

If you have a recorded video cassette tape

❶ Set the RF UNIT channel selector located at the rear of the recorder to 3CH or 4CH whichever channel is not active in your area.
❷ Push in the POWER switch. The lamp lights.

❸ Press the PROGRAM SELECT button to turn the VTR lamp on.
❹ Select an active channel in your area with a channel select button on the recorder.

❸ Insert the cassette with the round window to the left.
❹ Press the ▶ button.

❺ Turn on the TV.
❻ Set the TV receiver to either VHF channel 3 or 4 to agree with the setting of the RF UNIT channel selector.
The TV program selected on the recorder or the tape program will be displayed on the TV screen. If a picture does not appear on the TV screen or if the display is not clear, fine-tune the channel on the TV.
● For details about TV channel adjustment, see the instruction manual of the TV receiver.

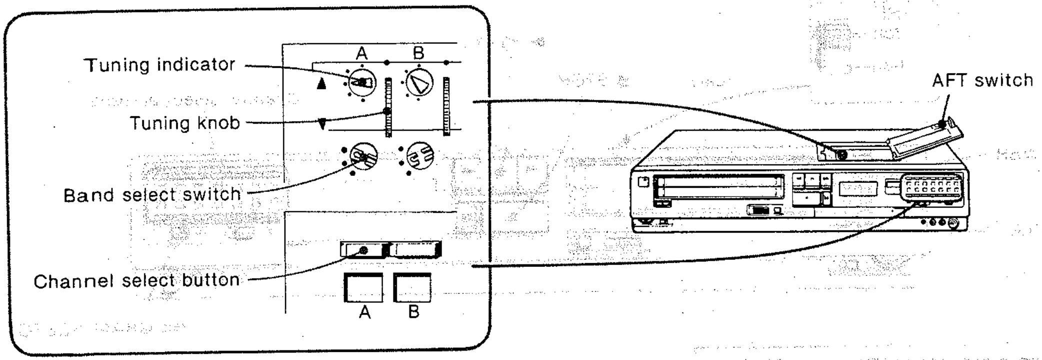
Check!
Check that the program displayed on the screen changes when a different channel select button on the recorder is selected.
If the program does not change, repeat the preceding steps.

Check!
Check that the display on the screen changes when you stop the tape by pressing the ■ button on the recorder. (To eject the cassette, press the ⏏ button.)
If the program does not change, repeat the preceding steps.

Now your TV receiver is tuned to the recorder. Whenever you use the video recorder, you should set the TV to the channel which you have chosen above.

-7. TO SET UP AND FINE-TUNE THE VHF AND UHF CHANNELS IN YOUR AREA

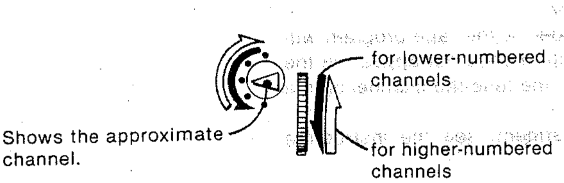
he channel select buttons are pre-adjusted at the factory to VHF channels 2 through 13 and to two UHF channels. hese pre-adjusted channels may be set up to receive any available VHF/UHF station in your area. To set up and fine-tune channels, pen the tuning compartment on the top of the recorder and proceed as follows :


Tuning indicator
Tuning knob
Band select switch
Channel select button
A
B
A
B
AFT switch

❶ Turn the recorder and the TV receiver on.
❷ Make sure that the TV receiver is set to the correct channel for the video recorder.
❸ Press the PROGRAM SELECT button to turn the VTR lamp on.
❹ Push the recorder channel select button to be preset. The associated channel indicator will light.
❺ Set the band select switch associated with the pushed button to one of these positions : VL (VHF Low), VH (VHF High), or U (UHF). Use a screwdriver if necessary.

To tune in channels 14 through 83 — U
To tune in channels 7 through 13 — VH
To tune in channels 2 through 6 — VL

❻ Tune by turning the corresponding tuning knob, watching the TV screen until the picture of the desired channel is clearly displayed and the sound is clear.

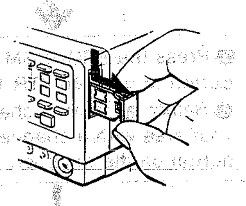

for lower-numbered channels
Shows the approximate channel.
for higher-numbered channels

❼ Repeat steps ❹, ❺ and ❻ for the other channel select buttons.
❽ When all stations have been set up as desired, check that the AFT switch is set to ON.

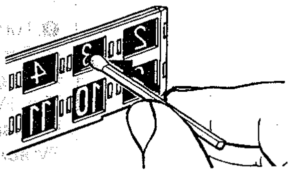
To replace the channel indicating segments

Channel indicating segments are supplied for identification of the preset channels. Insert the segments as follows :

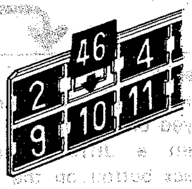
❶ Pull out the channel indication plate.



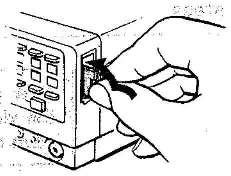
❷ Press the segment out from the rear.



❸ Pick out the appropriate segments for the channels preset and insert them into the plate.

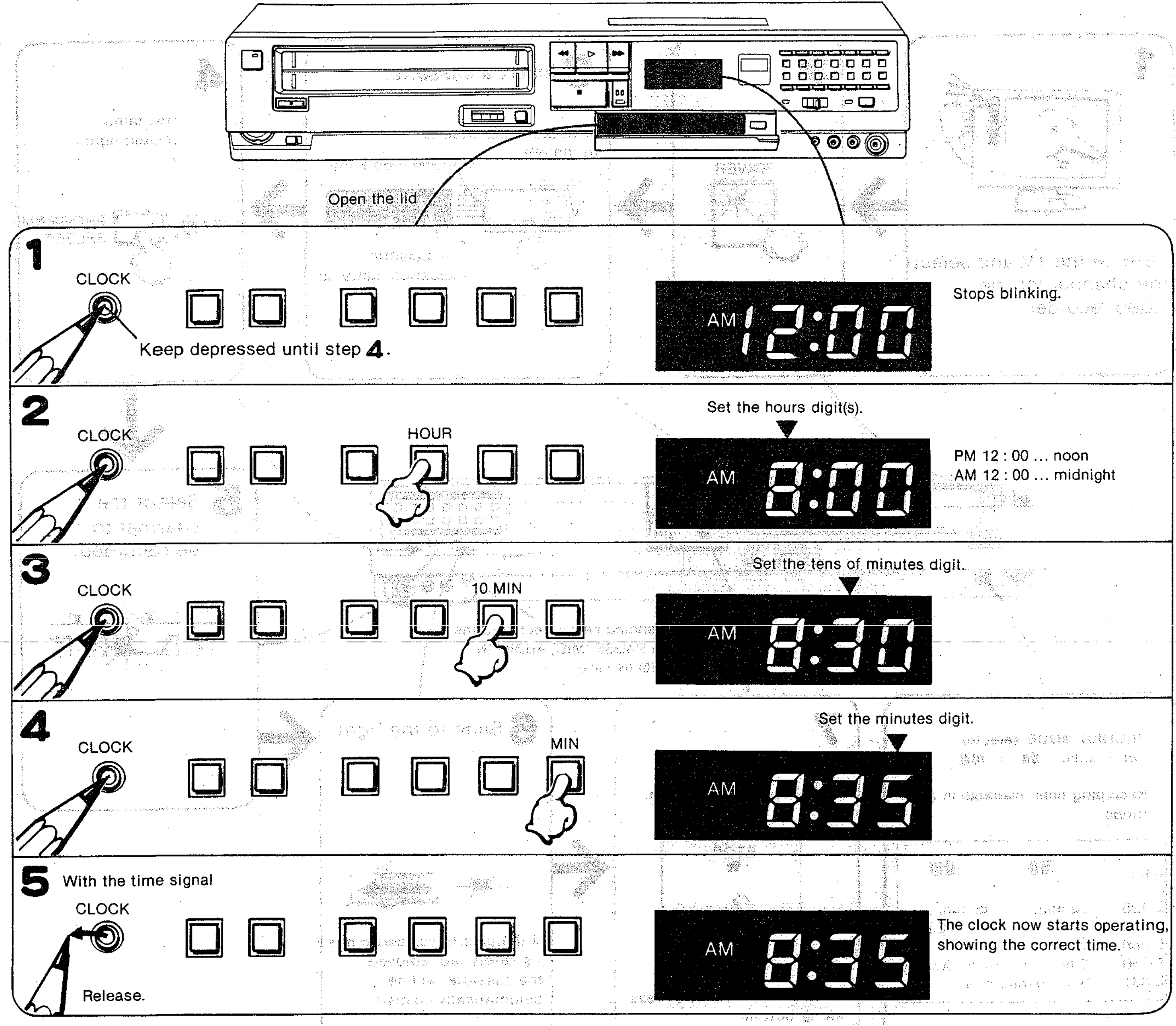


❹ Replace the plate.



1-8. SETTING THE CLOCK

When you connect the ac power cord to a wall outlet, the clock indicates, 12:00 a.m. and blinks to show that it must be set.
To set the clock to **8:35 a.m.** for example, proceed as follows :



Open the lid
1
CLOCK
Keep depressed until step 4.
AM 12:00
Stops blinking.
2
CLOCK
HOUR
Set the hours digit(s).
AM 8:00
PM 12 : 00 ... noon
AM 12 : 00 ... midnight
3
CLOCK
10 MIN
Set the tens of minutes digit.
AM 8:30
4
CLOCK
MIN
Set the minutes digit.
AM 8:35
5 With the time signal
CLOCK
Release.
AM 8:35
The clock now starts operating, showing the correct time.

Setting the hours and minutes digits
The HOUR, 10 MIN and MIN buttons can be pressed in two ways :

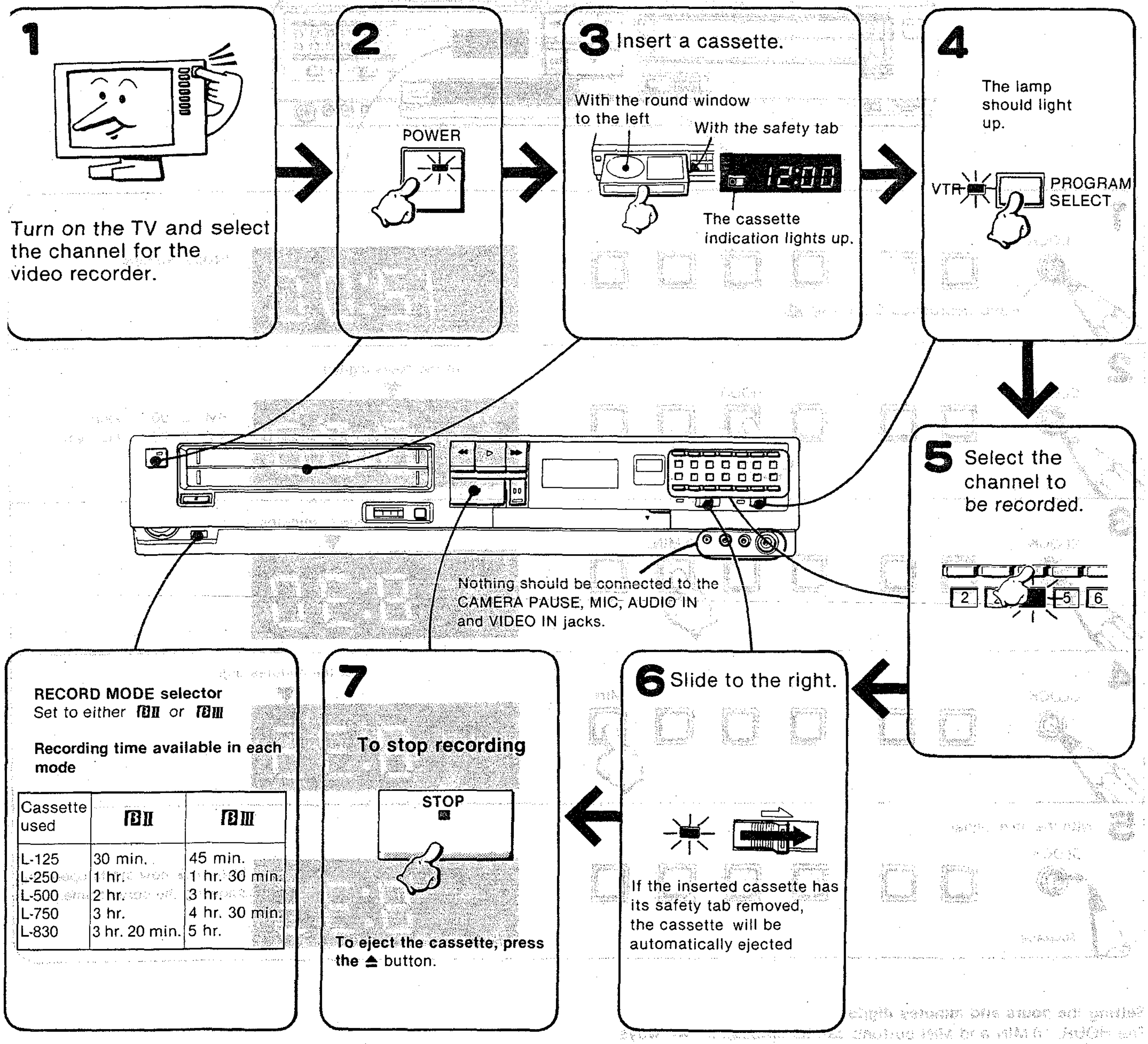
When you hold a button down, the digits will advance continuously until the button is released.

When you press and immediately release a button, the digits will advance by one.

9. HOW TO RECORD TV PROGRAMS

aution

elevision programs, films, video tapes and other materials may be copyrighted.
nauthorized recording of such material may be contrary
o the provisions of the copyright laws.



1 Turn on the TV and select the channel for the video recorder.

2 POWER

3 Insert a cassette.
With the round window to the left
With the safety tab
The cassette indication lights up.

4 The lamp should light up.

5 Select the channel to be recorded.

Nothing should be connected to the CAMERA PAUSE, MIC, AUDIO IN and VIDEO IN jacks.

6 Slide to the right.

If the inserted cassette has its safety tab removed, the cassette will be automatically ejected

7 To stop recording

To eject the cassette, press the ≜ button.

RECORD MODE selector
Set to either βII or βIII

Recording time available in each mode

Cassette used	βII	βIII
L-125	30 min.	45 min.
L-250	1 hr.	1 hr. 30 min.
L-500	2 hr.	3 hr.
L-750	3 hr.	4 hr. 30 min.
L-830	3 hr. 20 min.	5 hr.

To stop the tape momentarily

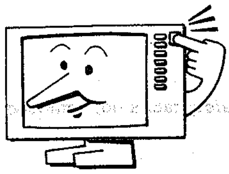
Press the ▮▮ PAUSE button. The lamp on the button will blink.
The TV program can be seen on the TV, but the picture will not be recorded.
To resume recording, press the button again.
To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and recording will resume.

RECORDING ONE TV PROGRAM WHILE VIEWING ANOTHER

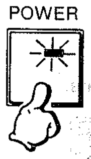
You can record a TV program selected on the recorder while viewing another TV program.
❶ Start recording the desired TV program following the above procedures.
❷ Press the PROGRAM SELECT button so that the VTR lamp goes off.
❸ Select the channel you want to view on the TV.

1-10. HOW TO PLAYBACK A RECORDED TAPE

1 Turn on the TV and select the channel for the video recorder.

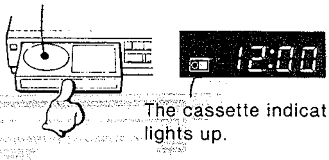


2

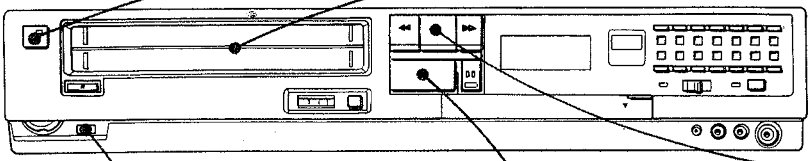


3 Insert a cassette.

With the round window to the left

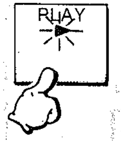


The cassette indication lights up.

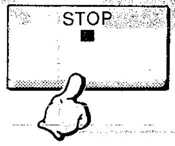


During playback, the ⒷI, ⒷII or ⒷIII mode is automatically selected depending on which mode the tape to be played back was recorded in.

4



To stop playing

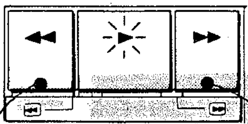


To eject the cassette, press the ⏏ button.

BETASCAN ... To search for a particular point while viewing the picture

Betascan operation during playback

During playback

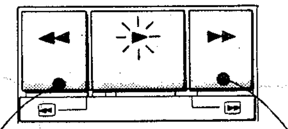


Press this for backward movement.

Press this for forward movement.

At the desired point, release the button.
The normal playback will resume.

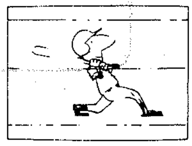
Beta SkipScan operation during rewind or fast forward mode.



When rewinding the tape, keep depressed for backward movement.

When rapidly advancing the tape, keep depressed for forward movement.

At the desired point, release the button. The normal rewind/fast forward mode will resume.

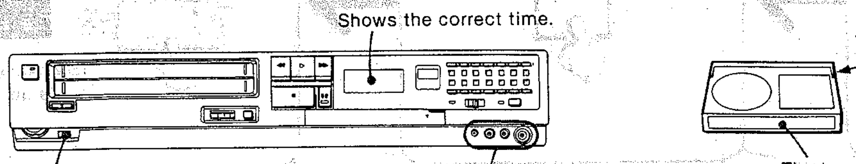


Streaks will appear and sound cannot be heard in the Betascan or Beta SkipScan picture.

1-11. TIMER-ACTIVATED RECORDING

This timer can only be used to start and stop recording. You can set one turn-on time and one turn-off time for recording within the next 3 days.
The clock time must first be set to the correct time. To set the clock.

Check before operation!



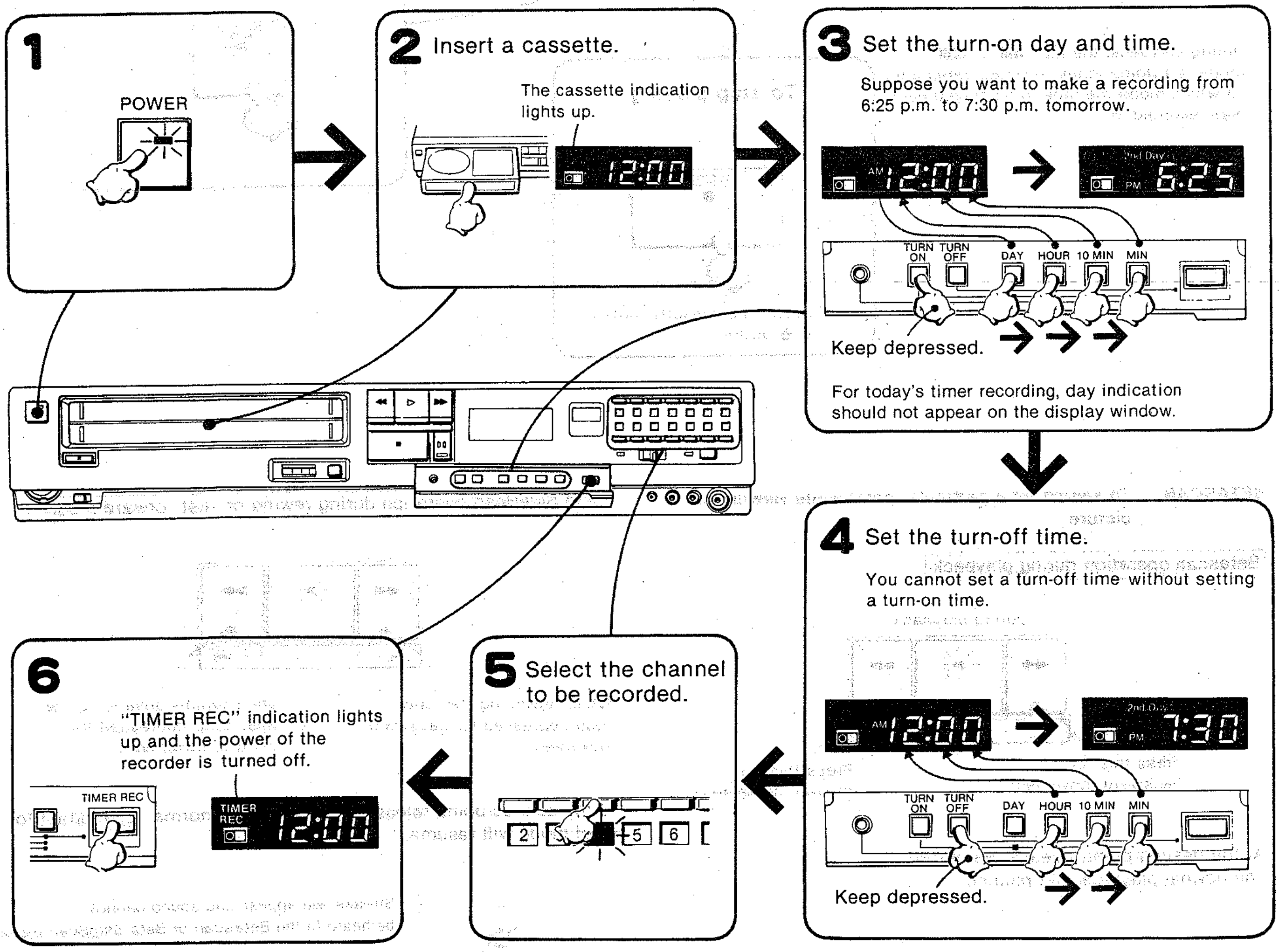
Shows the correct time.

The safety tab is not removed.

No connection

The tape is not at its end.

RECORD MODE selector
→ to the appropriate position


POWER
12:00
AM 12:00
2nd Day PM 6:25
TURN ON
TURN OFF
DAY
HOUR
10 MIN
MIN
AM 12:00
2nd Day PM 7:30
TIMER REC
TIMER REC 12:00
2
5
6

1

2 Insert a cassette.

The cassette indication lights up.

3 Set the turn-on day and time.

Suppose you want to make a recording from 6:25 p.m. to 7:30 p.m. tomorrow.

Keep depressed.

For today's timer recording, day indication should not appear on the display window.

4 Set the turn-off time.

You cannot set a turn-off time without setting a turn-on time.

Keep depressed.

5 Select the channel to be recorded.

6

"TIMER REC" indication lights up and the power of the recorder is turned off.

At the preset turn-on time, recording will start automatically and will continue to the preset turn-off time or to the end of the tape, at which time the recorder will be automatically turned off.

To check the timer setting
Press the TURN ON button to check the turn-on day/time and the TURN OFF button to check the turn-off time. You can reset the turn-on day/time and turn-off time separately, if necessary.

When the timer-activated recording is finished,
press the TIMER REC button to release it.
If you leave the TIMER REC button depressed, the timer recording will be activated at the same time everyday as long as the tape remains.

If the "TIMER REC" and "o■" indications blink and power is not turned off when you have pressed the TIMER REC button, check if a cassette is inserted.

If the inserted cassette is automatically ejected when you have pressed the TIMER REC button, check that the cassette's safety tab is not removed.

NOTICE: ONCE THE TIMER REC LAMP HAS LIT UP, no function of the recorder can be activated, except the timer section settings. To operate the recorder after setting the timer, depress the TIMER REC button to release it.

To record to the end of the tape
Set the turn-off time a little after the time the tape would normally run out.

To interrupt a timer-activated recording
Press the ■ STOP button and the recorder will be turned off, then press the TIMER REC button to release it.
To set the unit to make the next timer recording on the same cassette, eject and insert the cassette again.

WHEN A POWER INTERRUPTION OCCURS

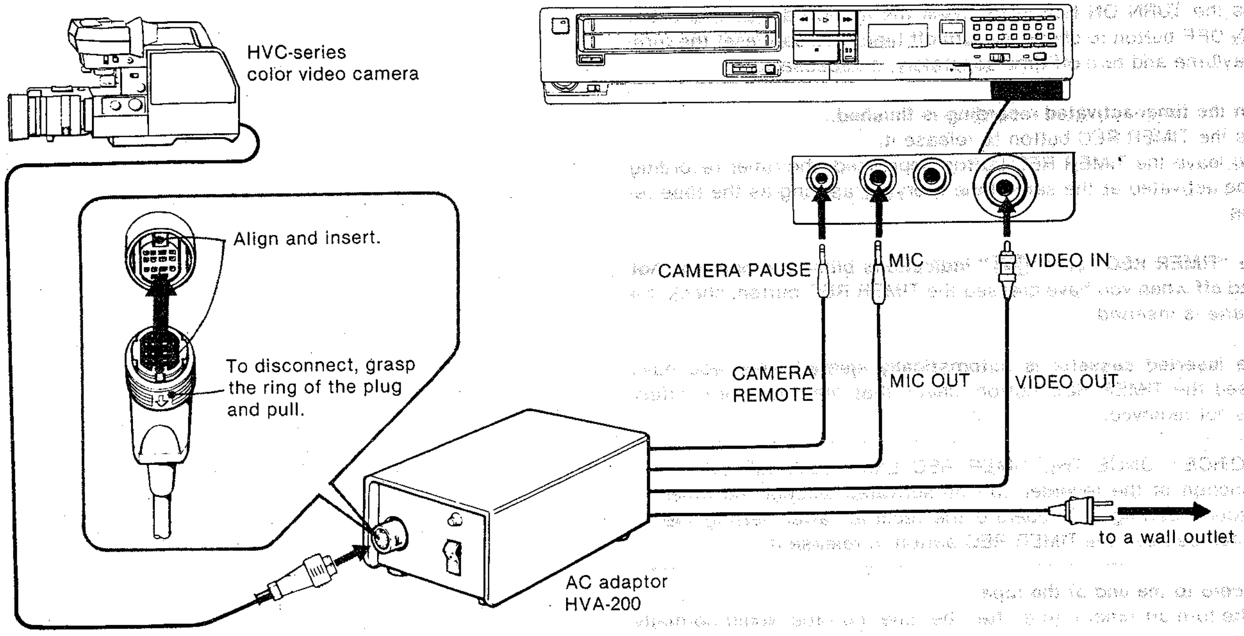
If the clock shows "AM 12:00" and blinks, all the timer settings have been erased. Reset the clock time and the timer settings.

If the clock still shows the correct time, the power has been interrupted for less than 10 seconds, and the timer programs are retained in the memory.

1-12. CAMERA RECORDING ... For producing your own programs

CONNECTIONS

- The camera must conform to American TV (EIA) standards.
- The use of a Sony HVA-200 ac adaptor is required.

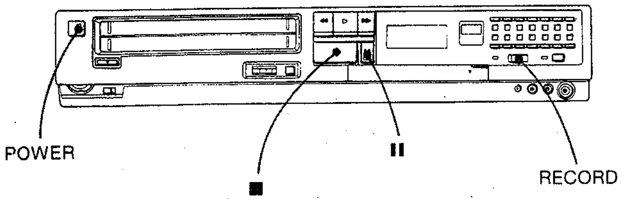

HVC-series
color video camera
Align and insert.
To disconnect, grasp the ring of the plug and pull.
CAMERA PAUSE
MIC
VIDEO IN
CAMERA REMOTE
MIC OUT
VIDEO OUT
to a wall outlet
AC adaptor
HVA-200

To record the sound from a microphone
Plug a microphone into the MIC jack. If the microphone has a phone type plug, use a Sony PC-1A plug adaptor.

- When both the MIC and AUDIO IN jacks are connected, the sound from the microphone will be recorded.

To record the sound from other audio sources
Connect an audio source, such as a tape recorder, into the AUDIO IN jack.

OPERATION


POWER
■
II
RECORD

❶ Press the POWER switch to turn on the recorder and insert a cassette.
❷ Turn on the power switch on the ac adaptor.
❸ Make the necessary adjustments on the camera. See the instruction manual furnished with the camera.
❹ Slide the RECORD switch to the right. Recording will begin.

- If a camera with a tape run/stop button is used, you can momentarily stop recording and restart it using that button.
- If any other camera is used, use the II button on the recorder or the PAUSE button on the remote control unit to stop the recording momentarily and restart it.

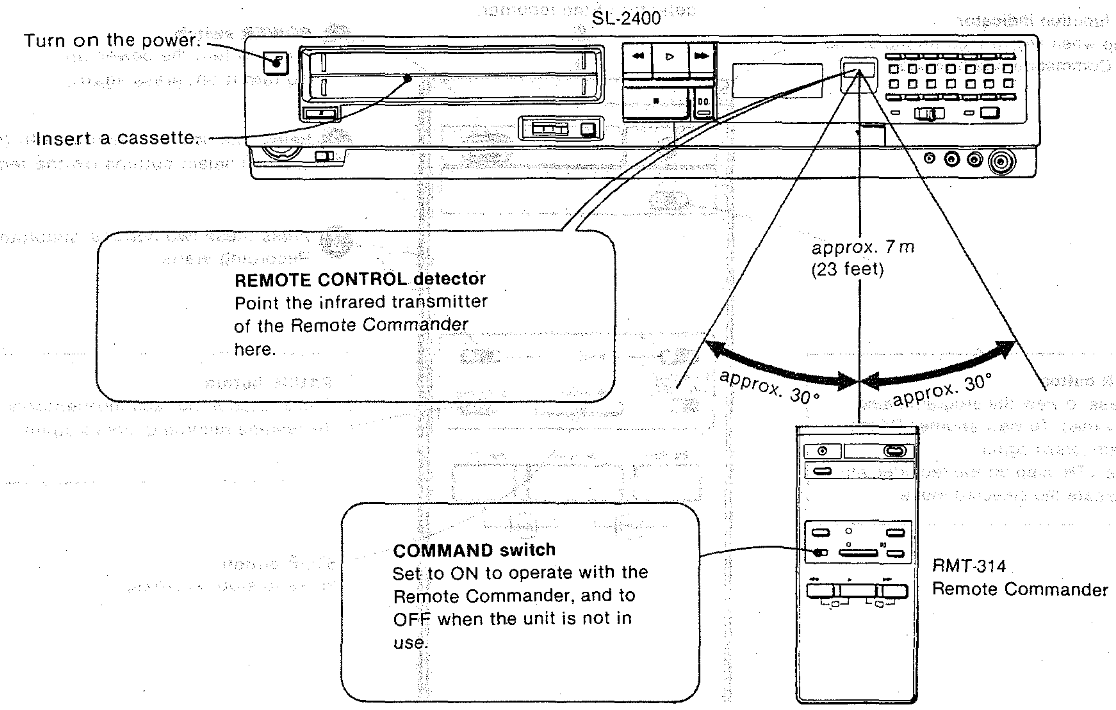
To stop recording, press the ■ button.

To view the picture being recorded on the TV screen
❶ Turn the connected TV on.
❷ Select the channel for the video recorder on the TV.
❸ Press the PROGRAM SELECT button so that the VTR lamp lights up.
The picture being recorded will appear on the TV screen.

- If acoustic feedback (a whistle-like sound) is heard when the microphone sound is recorded, turn the microphone (or the camera, if the microphone is built into the camera) away from the TV or turn down the TV volume.

1-13. REMOTE CONTROL OPERATION

You can control almost all of the functions of the video cassette recorder from your armchair using the supplied RMT-314 Remote Commander.


SL-2400
Turn on the power.
Insert a cassette.
approx. 7 m
(23 feet)
approx. 30°
approx. 30°
RMT-314
Remote Commander

REMOTE CONTROL detector
Point the infrared transmitter of the Remote Commander here.

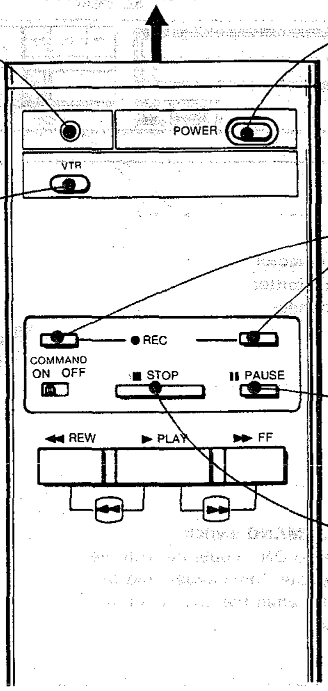
COMMAND switch
Set to ON to operate with the Remote Commander, and to OFF when the unit is not in use.

- There should be no obstacles between the Remote Commander and the remote control detector of the recorder.
- The shorter the distance between the Remote Commander, the wider the angle within which the recorder can be controlled.

Notes on the Remote Commander

- Avoid dropping foreign objects into the cabinet, particularly when replacing batteries.
- Keep the unit away from extremely hot or humid places.
- Avoid mechanical shock to the unit.

RECORDING



Point toward the remote control detector of the recorder.

Remote function indicator
Lights up when any of the buttons on the Remote Commander are pressed.

❶ **POWER switch**
Press to turn the power on.
(To turn it off, press again.)

❷ Select the desired channel with the channel select buttons on the recorder.

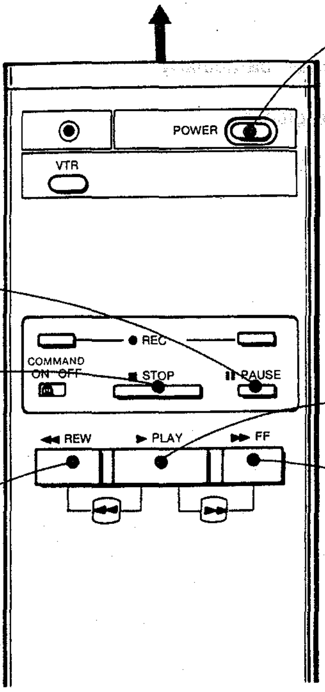
❸ Press these two buttons simultaneously.
Recording starts.

VTR button
Press to view the program being recorded. To view another TV program, press again.
The VTR lamp on the recorder will indicate the selected mode.

PAUSE button
Press to stop the tape momentarily.
To resume recording, press again.

STOP button
Press to stop recording.

PLAYBACK



Point toward the remote control detector of the recorder.

❶ **POWER switch**
Press to turn the power on.
(To turn it off, press again.)

PAUSE button
Press for a freeze picture.
Press again to resume normal speed playback.

STOP button
Press to stop the tape.

❷ Press. The playback begins.

◀◀ REW button
Press to rewind the tape.
Used also for Betascan or Beta SkipScan operation in the reverse direction.

▶▶ FF button
Press to advance the tape rapidly.
Used also for Betascan or Beta SkipScan operation in the forward direction.

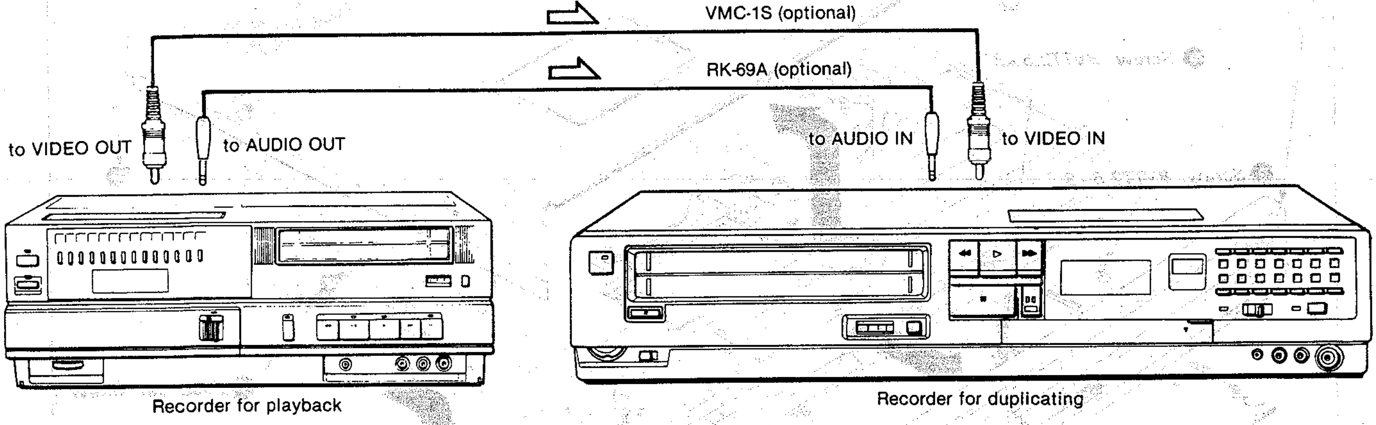
1-14. CLOSED CAPTION RECORDING AND PLAYBACK

This video cassette recorder has the capability of recording and playing back closed caption television programs for the hearing-impaired, when connected to a decoder unit or TV receiver designed to receive closed caption signals.
To play back, the CAPTIONS/PCM switch located at the rear of the recorder must be set to the left position.
Connection between the recorder and the decoder unit will depend on the unit you purchase. See the instruction manual supplied with the decoder.

1-15. TAPE COPY

CAUTION
Television programs, films, video tapes and other materials may be copyrighted. Unauthorized duplication of such material may be contrary to the provisions of the copyright laws.

To duplicate a tape you will need two video recorders ; one is to play back the original tape and the other is to duplicate.



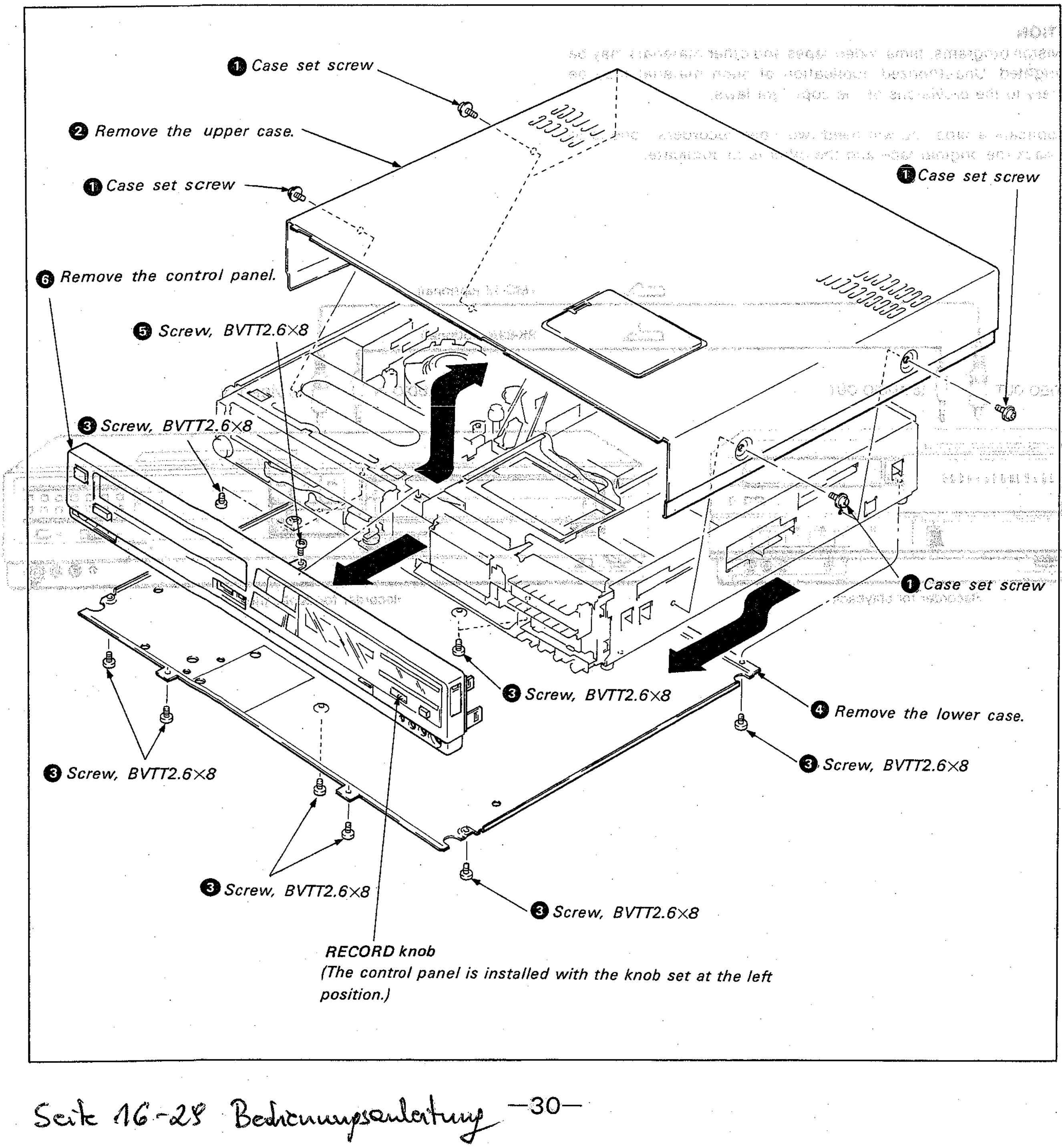
1-16. PCM RECORDING AND PLAYBACK

By connecting a PCM digital audio processor (Sony PCM-F1, etc.) you can enjoy hi-fi sound reproduction with a wide dynamic range, minimal distortion and a flat frequency response.
To play back, the CAPTIONS/PCM switch at the rear of the recorder must be set to the left position.
Connection between the recorder and the PCM digital audio processor will depend on the unit used. Follow the instruction manual of the digital audio processor.

1-17. DISASSEMBLY

1-17-1. Removal of Cabinet

❶ Remove the four case set screws.
❷ Remove the upper case in the direction indicated by the arrow.
❸ Remove the nine screws (BVTT2.6×8).
❹ Remove the lower case.
❺ Remove the screw (BVTT2.6×8).
❻ Remove the control panel Ass'y in the direction indicate by the arrow.


❶ Case set screw
❷ Remove the upper case.
❶ Case set screw
❶ Case set screw
❻ Remove the control panel.
❺ Screw, BVTT2.6×8
❸ Screw, BVTT2.6×8
❶ Case set screw
❸ Screw, BVTT2.6×8
❹ Remove the lower case.
❸ Screw, BVTT2.6×8
❸ Screw, BVTT2.6×8
❸ Screw, BVTT2.6×8
❸ Screw, BVTT2.6×8
RECORD knob
(The control panel is installed with the knob set at the left position.)

Seite 16-28 Bedienungsanleitung

1-17-2. Assembly of Timer Door Ass'y

❶ As shown in Fig. 1, insert the springs into the protrusions of the timer door Ass'y.

❷ Insert the timer door Ass'y into portion A and mount it on the front panel.

❸ Intrude the timer door Ass'y in the direction indicated by the arrow, as shown in Fig. 2.

❹ Intrude the springs.

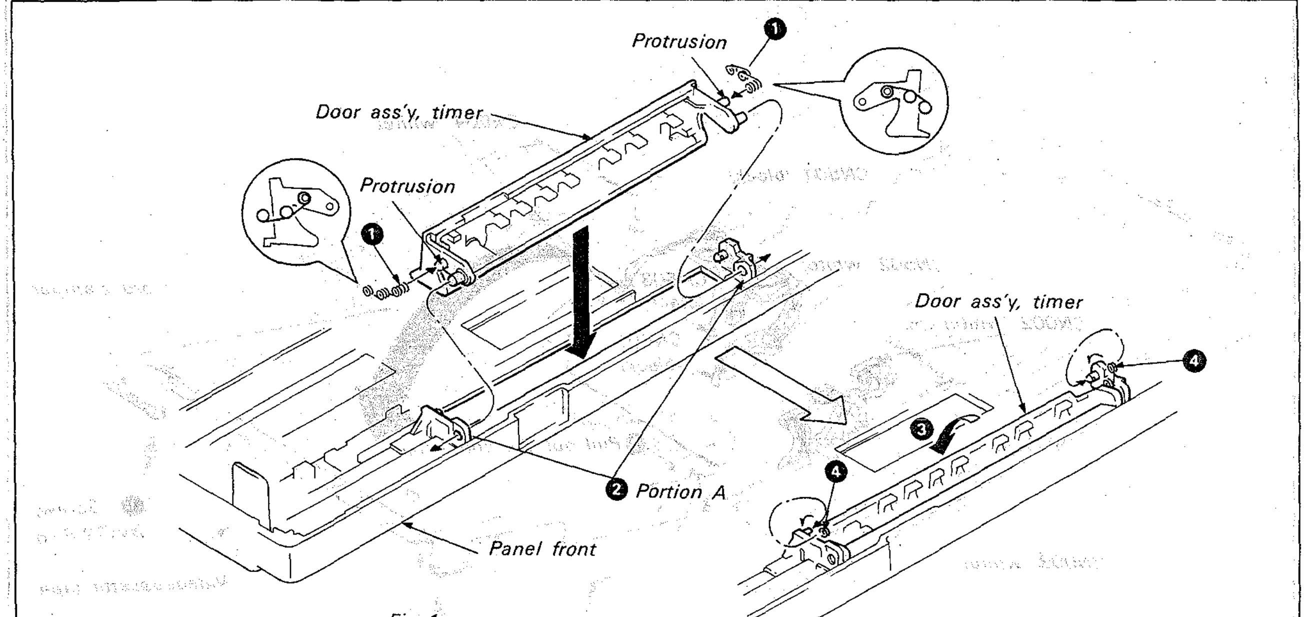

Protrusion
❶
Door ass'y, timer
Protrusion
❶
❷ Portion A
Panel front
Door ass'y, timer
❹
❸
❹

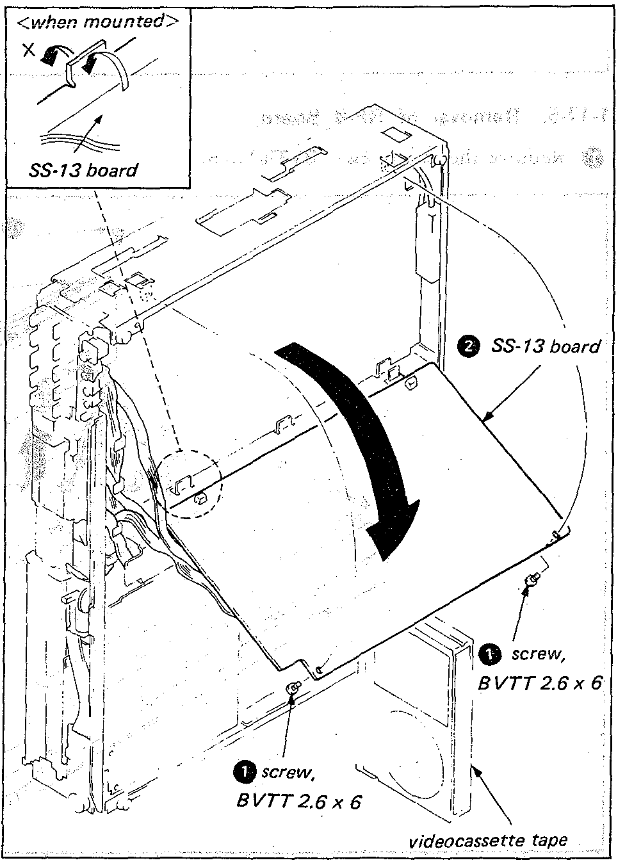
Fig. 1

Fig. 2

1-17-3. Removal of SS-13 Board

❶ Remove the two screws (BVTT2.6×6).

❷ Remove the SS-3 board. (Supported using a videocassette tape).


<when mounted>
X
SS-13 board
❷ SS-13 board
❶ screw,
BVTT 2.6 x 6
❶ screw,
BVTT 2.6 x 6
videocassette tape

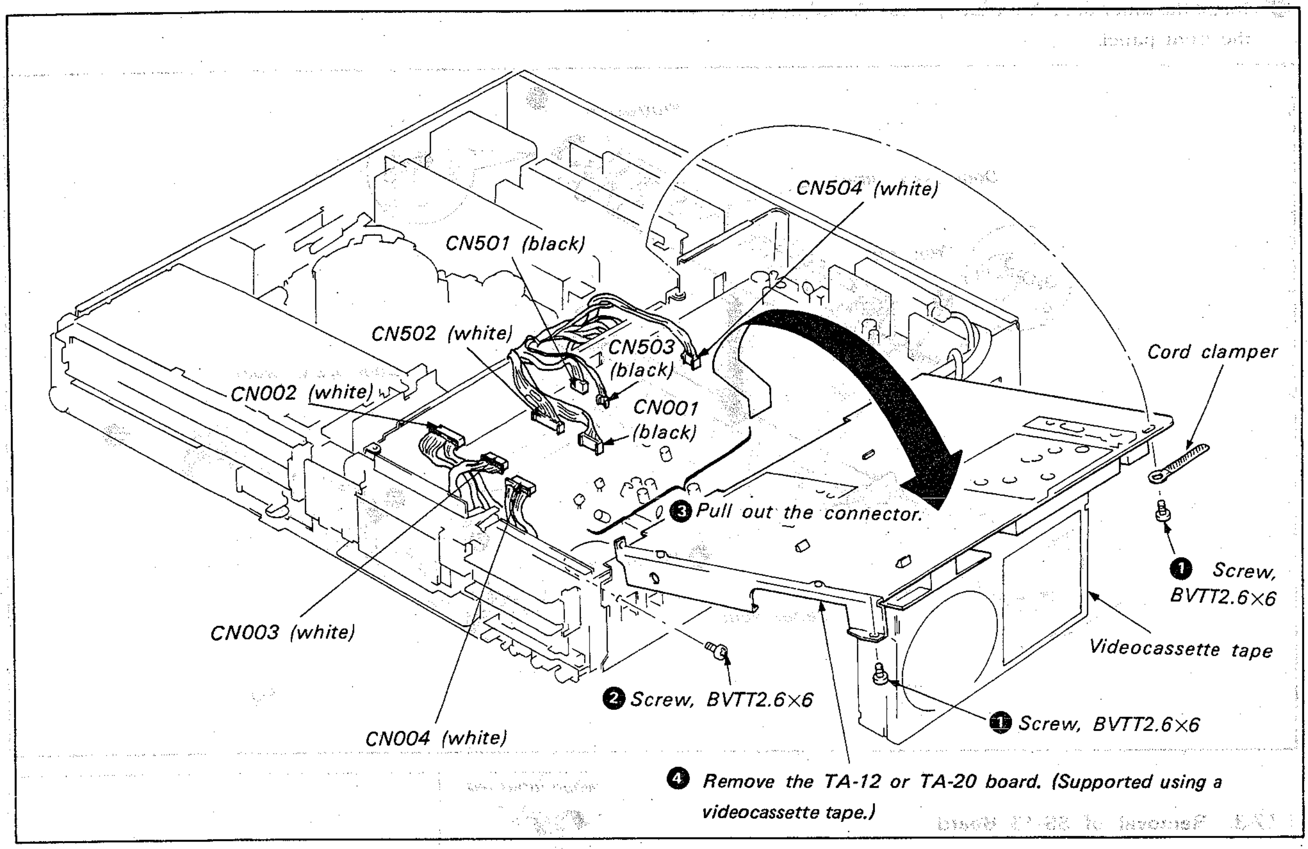
1-17-4. Removal of TA-12 or TA-20 Board

❶ Remove the two screws (BVTT2.6×6).

❷ Remove the screw (BVTT2.6×6).

❸ Pull out the eight connectors.

❹ Remove the TA-12 or TA-20 board. (Supported using a videocassette tape).

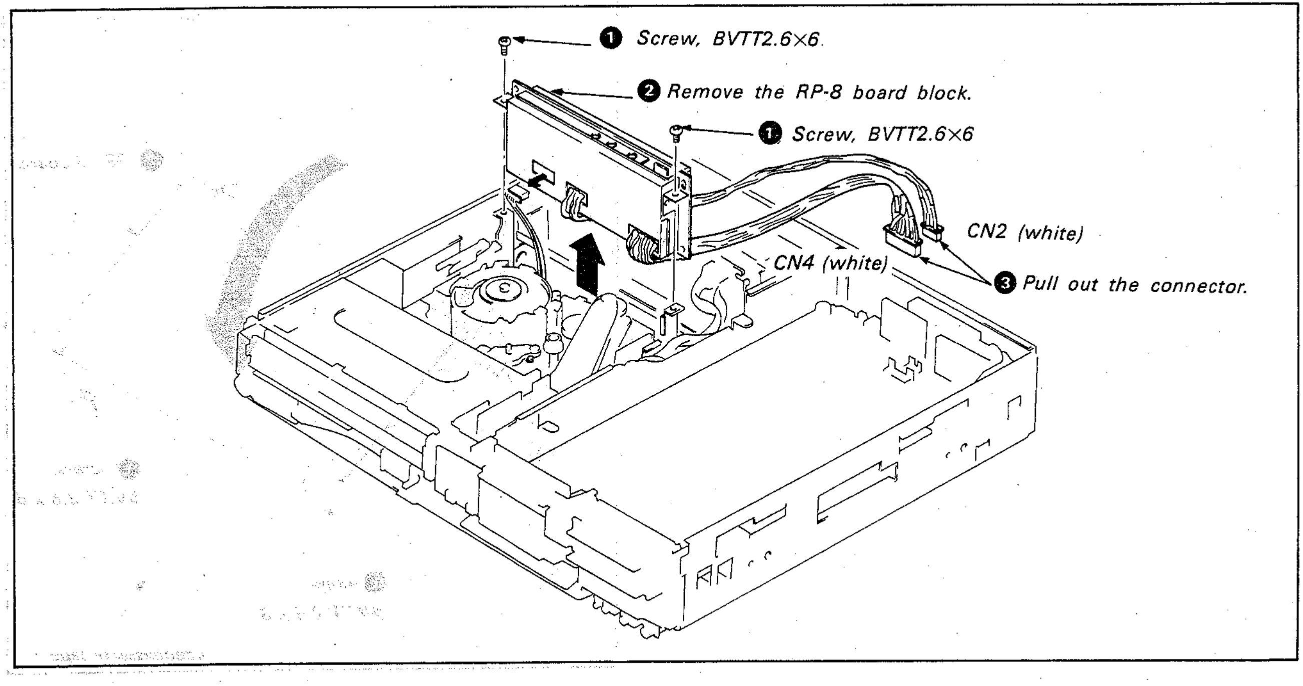

CN504 (white)
CN501 (black)
CN502 (white)
CN503 (black)
Cord clamper
CN002 (white)
CN001 (black)
❸ Pull out the connector.
❶ Screw, BVTT2.6×6
Videocassette tape
CN003 (white)
❷ Screw, BVTT2.6×6
❶ Screw, BVTT2.6×6
CN004 (white)
❹ Remove the TA-12 or TA-20 board. (Supported using a videocassette tape.)

1-17-5. Removal of RP-8 Board

❶ Remove the two screws (BVTT2.6×6).

❷ Remove the RP-8 board block.

❸ Pull out the connectors CN2 (white) and CN4 (white).

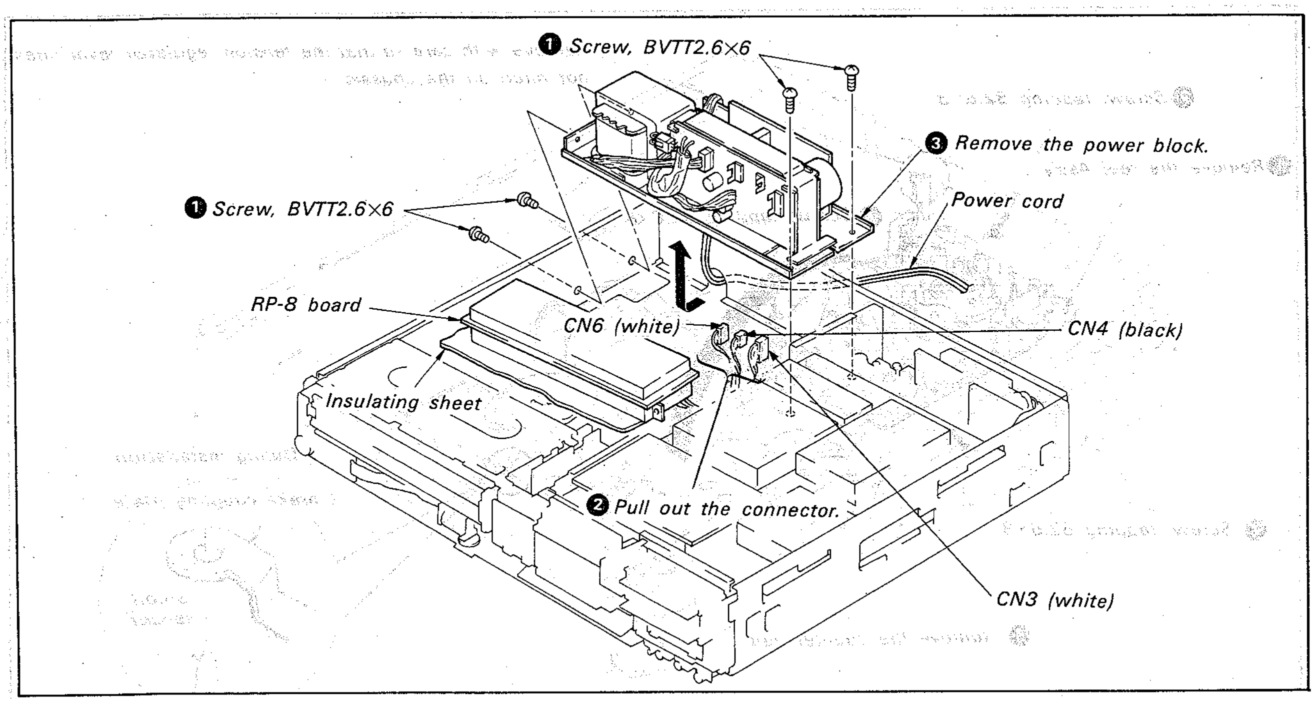

❶ Screw, BVTT2.6×6
❷ Remove the RP-8 board block.
❶ Screw, BVTT2.6×6
CN2 (white)
CN4 (white)
❸ Pull out the connector.

1-17-6. Removal of Power Block (PS-19, PS-20)

❶ Remove the four screws (BVTT2.6×6).

❷ Pull out the three connectors CN3 (white), CN4 (black) and CN6 (white).

❸ Remove the power block.


❶ Screw, BVTT2.6×6
❸ Remove the power block.
Power cord
❶ Screw, BVTT2.6×6
RP-8 board
CN6 (white)
CN4 (black)
Insulating sheet
❷ Pull out the connector.
CN3 (white)

1-17-7. Removal of TS-23 Board

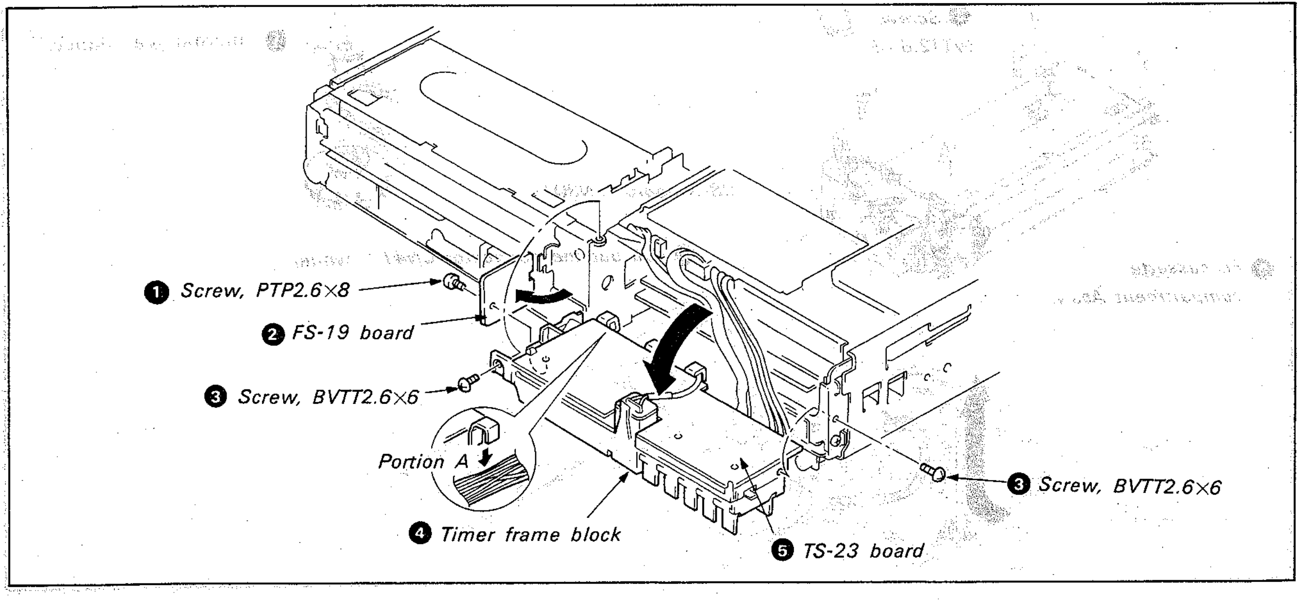
❶ Remove the screw (PTP2.6×8).

❷ Remove the FS-19 board.

❸ Remove the two screws (BVTT2.6×6).

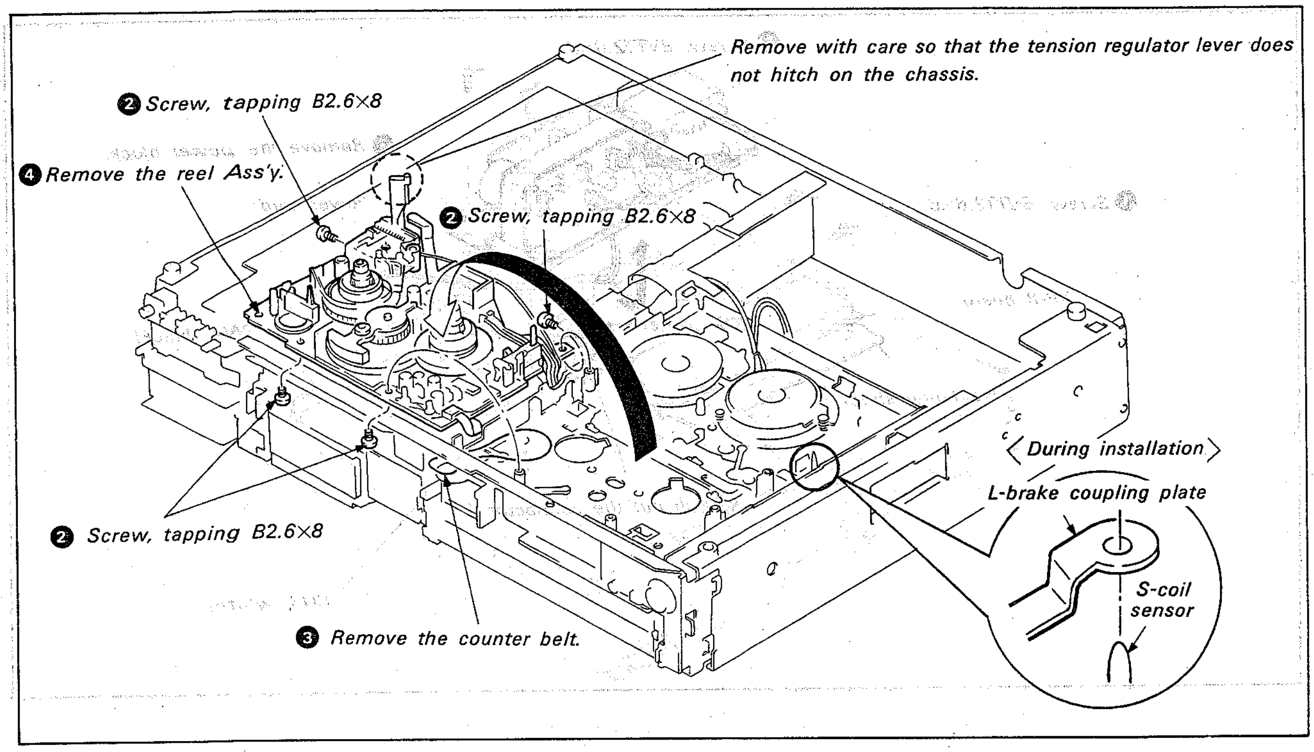
❹ Lay the timer frame block in the direction indicated by the arrow. (Performed after removal of three lead wires at portion A.)

❺ Remove the TS-23 board.


❶ Screw, PTP2.6×8
❷ FS-19 board
❸ Screw, BVTT2.6×6
Portion A
❹ Timer frame block
❺ TS-23 board
❸ Screw, BVTT2.6×6

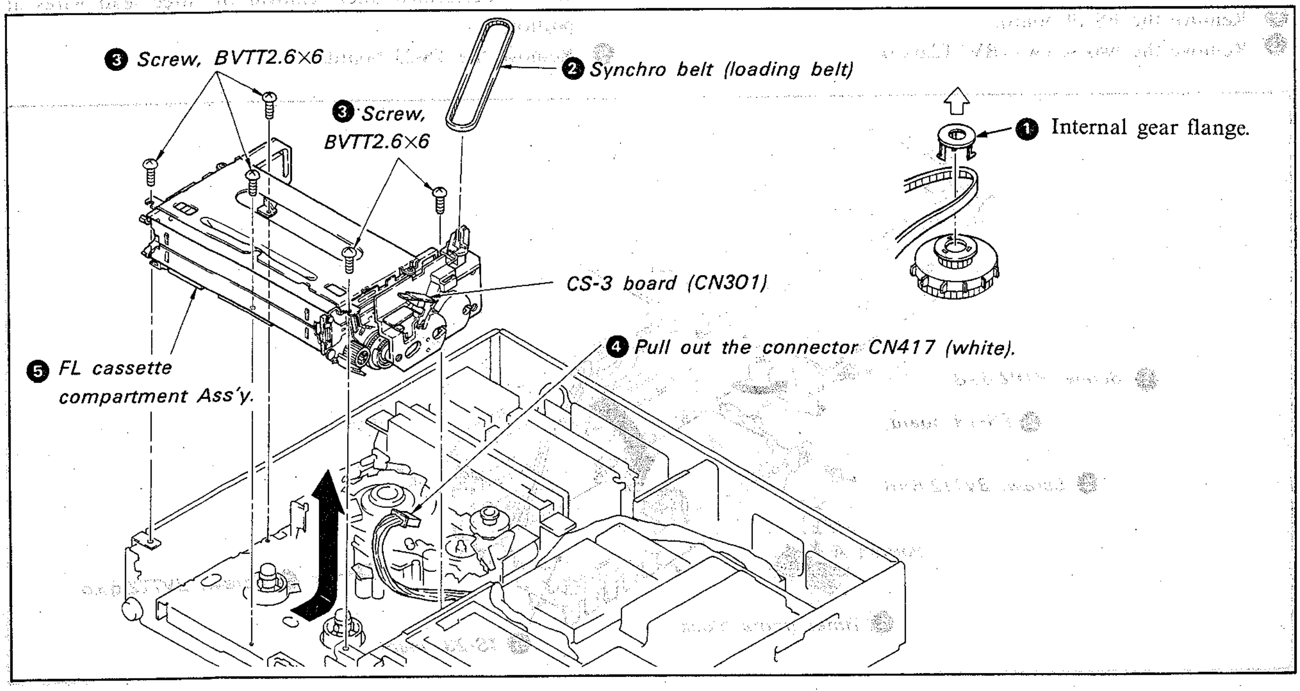
1-17-8. Removal of Reel Ass'y

❶ Turn the upper panel upside down.
❷ Remove the four screws (tapping B2.6×8).
❸ Remove the counter belt.
❹ Remove the reel Ass'y.


Remove with care so that the tension regulator lever does not hitch on the chassis.
❷ Screw, tapping B2.6×8
❹ Remove the reel Ass'y.
❷ Screw, tapping B2.6×8
⟨During installation⟩
L-brake coupling plate
S-coil sensor
❷ Screw, tapping B2.6×8
❸ Remove the counter belt.

1-17-9. Removal of FL Cassette Compartment Ass'y

❶ Remove the internal gear flange.
❷ Remove the synchro belt.
❸ Remove the five screws (BVTT2.6×6).
❹ Pull out the connector CN417 (white).
❺ Remove the FL cassette compartment Ass'y in the direction indicated by the arrow (A).


❸ Screw, BVTT2.6×6
❷ Synchro belt (loading belt)
❸ Screw, BVTT2.6×6
❶ Internal gear flange.
CS-3 board (CN301)
❹ Pull out the connector CN417 (white).
❺ FL cassette compartment Ass'y.

1-17-10. Removal of Loading and Threading Motors (M904)

❶ Remove the internal gear flange.

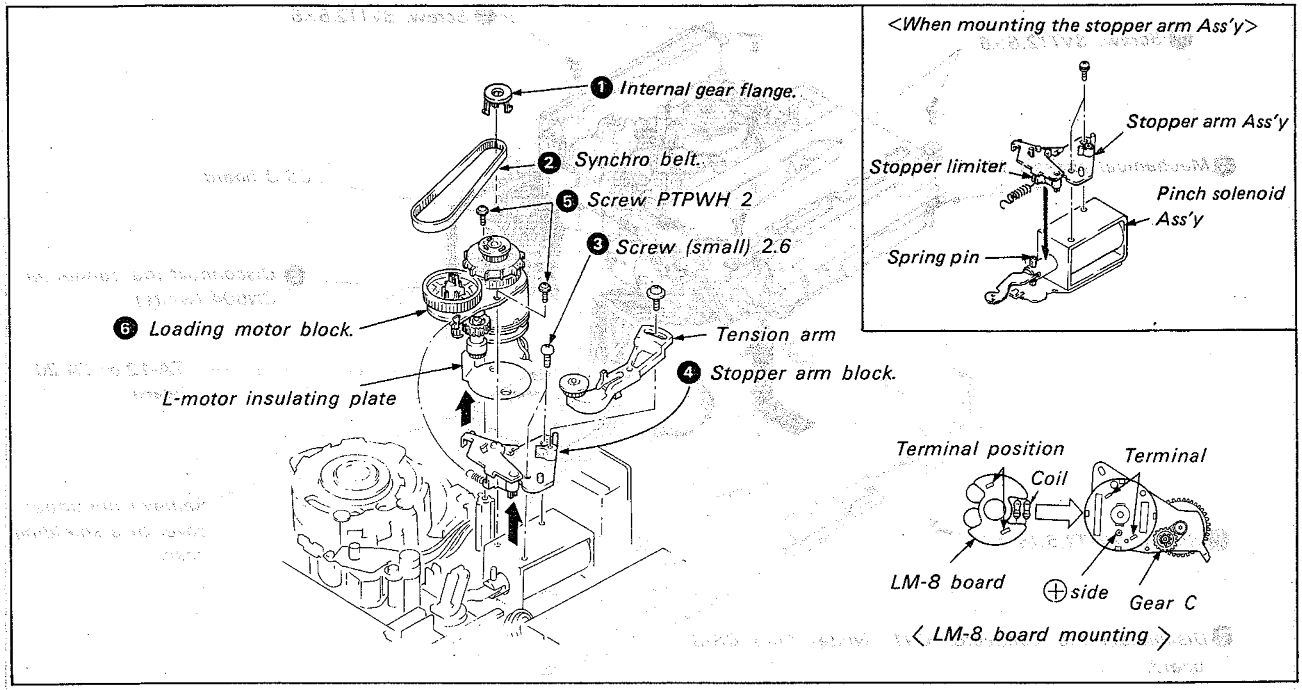
❷ Remove the synchro belt.

❸ Remove the two screws (small 2.6).

❹ Remove the stopper arm block.

❺ Remove the two screws (PTPWH 2).

❻ Remove the loading motor block.


❶ Internal gear flange.
❷ Synchro belt.
❺ Screw PTPWH 2
❸ Screw (small) 2.6
❻ Loading motor block.
L-motor insulating plate
Tension arm
❹ Stopper arm block.
<When mounting the stopper arm Ass'y>
Stopper arm Ass'y
Stopper limiter
Pinch solenoid Ass'y
Spring pin
Terminal position
Terminal
Coil
LM-8 board
⊕side
Gear C
< LM-8 board mounting >

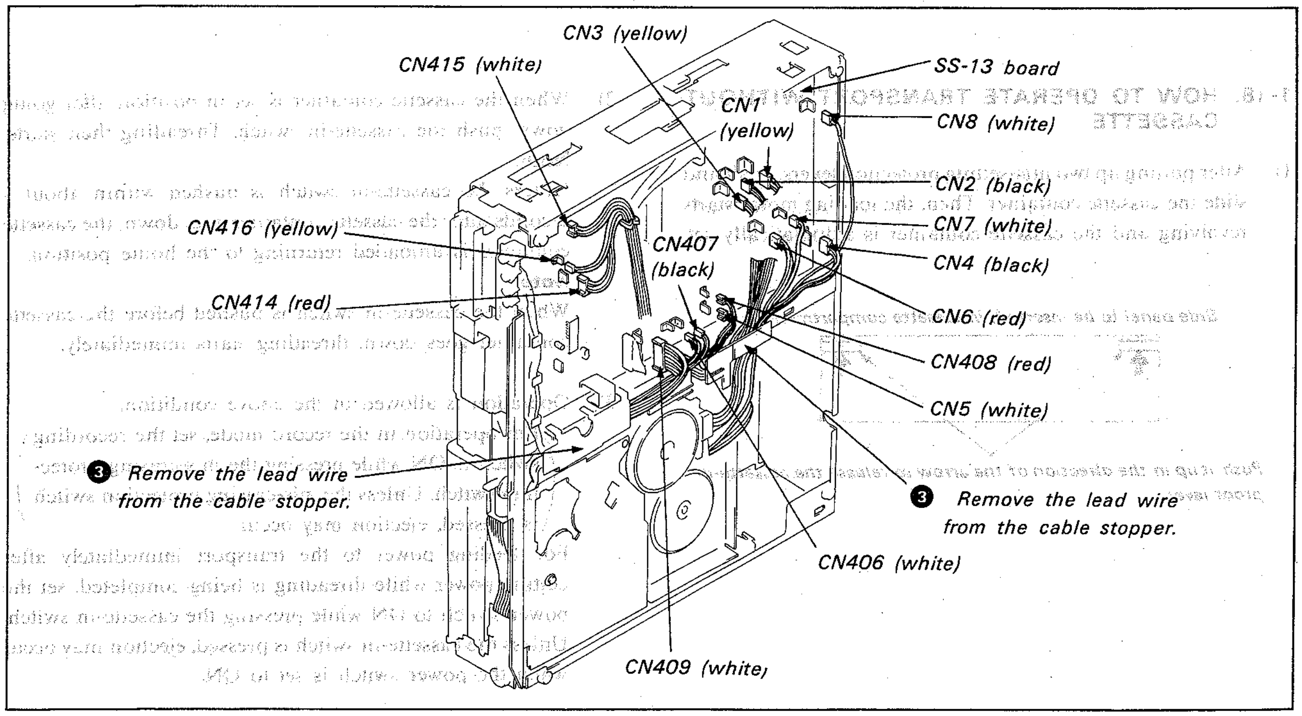
1-17-11. Removal of Mechanical Chassis Block

(1)

❶ Place the main unit with a left side panel on the bottom.

❷ Disconnect the connector from SS-13 board.

❸ Remove the connector, and then remove the lead wires from the cable stopper or harness stopper.


CN3 (yellow)
CN415 (white)
SS-13 board
CN1 (yellow)
CN8 (white)
CN2 (black)
CN416 (yellow)
CN7 (white)
CN407 (black)
CN4 (black)
CN414 (red)
CN6 (red)
CN408 (red)
CN5 (white)
❸ Remove the lead wire from the cable stopper.
❸ Remove the lead wire from the cable stopper.
CN406 (white)
CN409 (white)

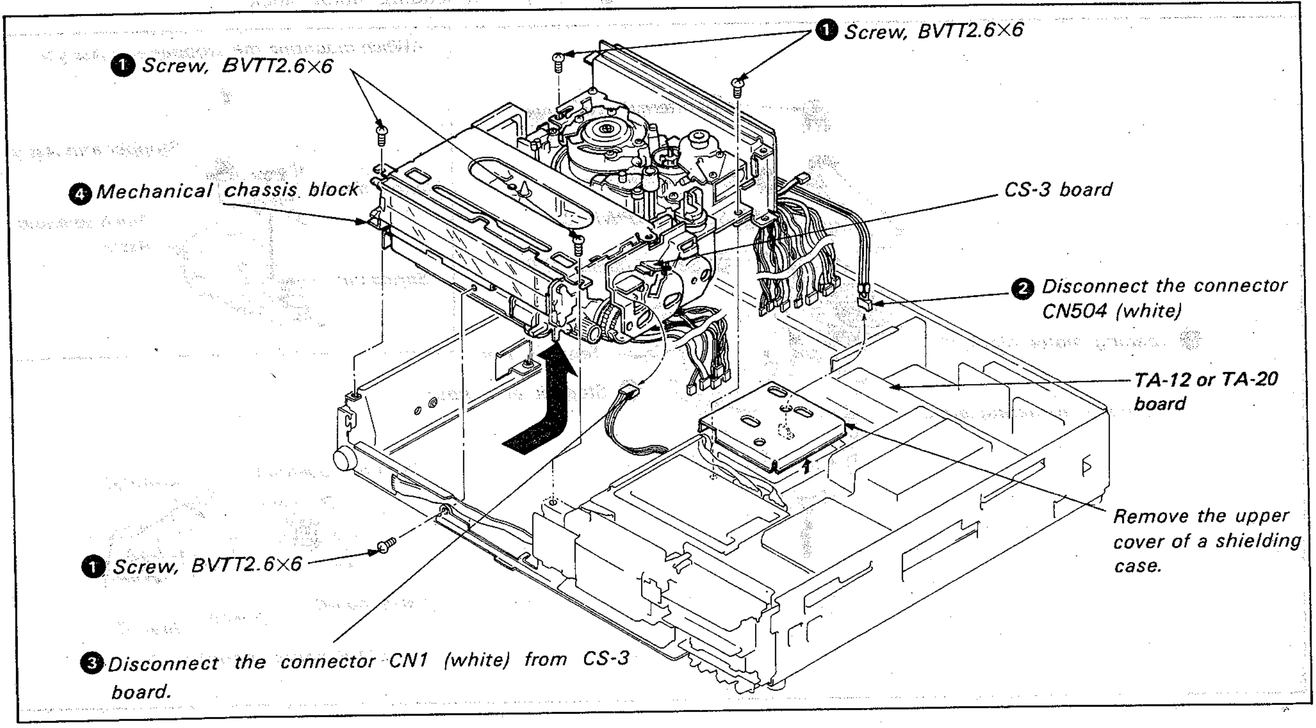
(2)

❶ Remove the five screws (BVTT2.6×6).

❷ Remove the upper cover of a shielding case on the TA-12 or TA-20 board and pull out the connector CN504 (white).

❸ Disconnect the connector CN1 (white) from CS-3 board.

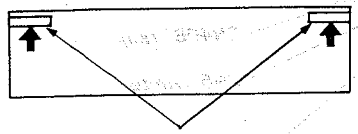
❹ Pull out the mechanical chassis block in the direction indicated by the arrow.


❶ Screw, BVTT2.6×6
❶ Screw, BVTT2.6×6
❹ Mechanical chassis block
CS-3 board
❷ Disconnect the connector CN504 (white)
TA-12 or TA-20 board
Remove the upper cover of a shielding case.
❶ Screw, BVTT2.6×6
❸ Disconnect the connector CN1 (white) from CS-3 board.

1-18. HOW TO OPERATE TRANSPORT WITHOUT CASSETTE

1) After pulling up two mis-setting protection levers, push and slide the cassette container. Then, the loading motor starts revolving and the cassette container is automatically set.

(Side panel to be inserted, in cassette compartment)



Push it up in the direction of the arrow to release the cassette-in proof lever.

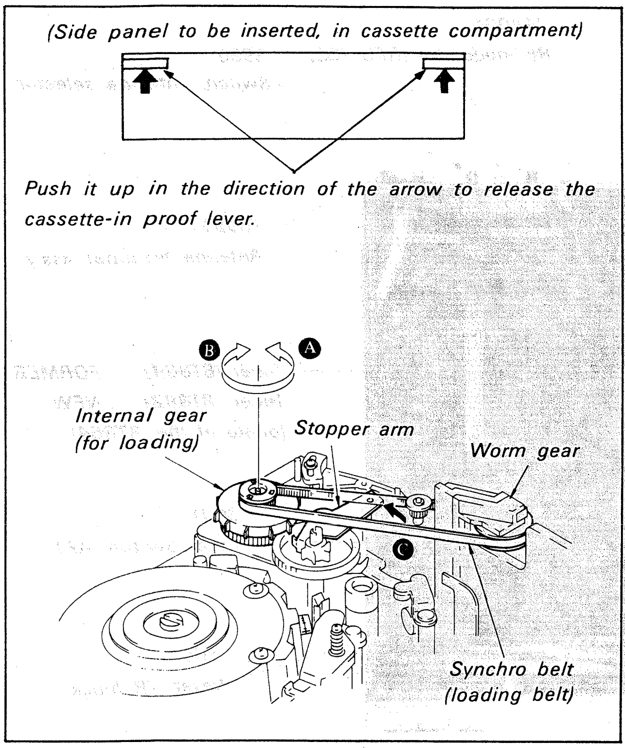
2) When the cassette container is set in position after going down, push the cassette-in switch. Threading then starts.

Note:
Unless the cassette-in switch is pushed within about 5 seconds after the cassette container goes down, the cassette container is unloaded returning to the home position.

Note:
When the cassette-in switch is pushed before the cassette container goes down, threading starts immediately.

3) Operation is allowed in the above condition.
(For operation in the record mode, set the recording switch to ON while pressing the mis-erasing protection switch. Unless the mis-erasing protection switch is pressed, ejection may occur.)
For feeding power to the transport immediately after cutting power while threading is being completed, set the power switch to ON while pressing the cassette-in switch. Unless the cassette-in switch is pressed, ejection may occur when the power switch is set to ON.

1-19. LOADING AND UNLOADING DURING POWER OFF

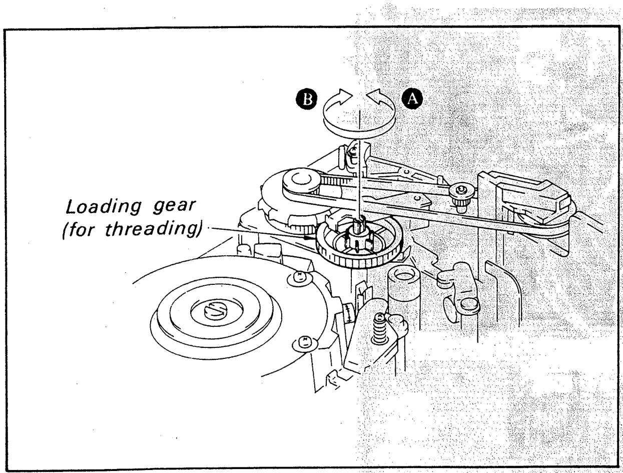

(Side panel to be inserted, in cassette compartment)

Push it up in the direction of the arrow to release the cassette-in proof lever.

1) Release the two (left and right) cassette-in proof levers in a cassette compartment, push the stopper arm in the direction indicated by the arrow Ⓒ and release stop of the internal gear.
2) Rotate the internal gear in the direction of the arrow Ⓐ with your fingers until loading is completed.
3) During unloading, rotate the internal gear in the direction indicated by the arrow Ⓑ.

Note: When the loading belt is being removed, perform loading and unloading by rotating a worm gear. (Be sure to rotate the worm gear with your fingers.)

1-20. THREADING AND UNTHREADING DURING POWER OFF

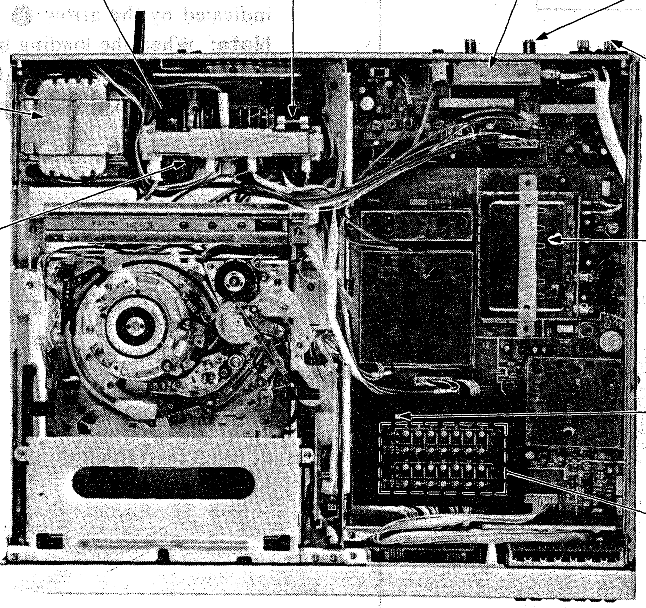


1) Rotate the loading gear in the direction of the arrow Ⓐ until threading is completed.
2) During unthreading, rotate the loading gear in the direction indicated by the arrow Ⓑ.

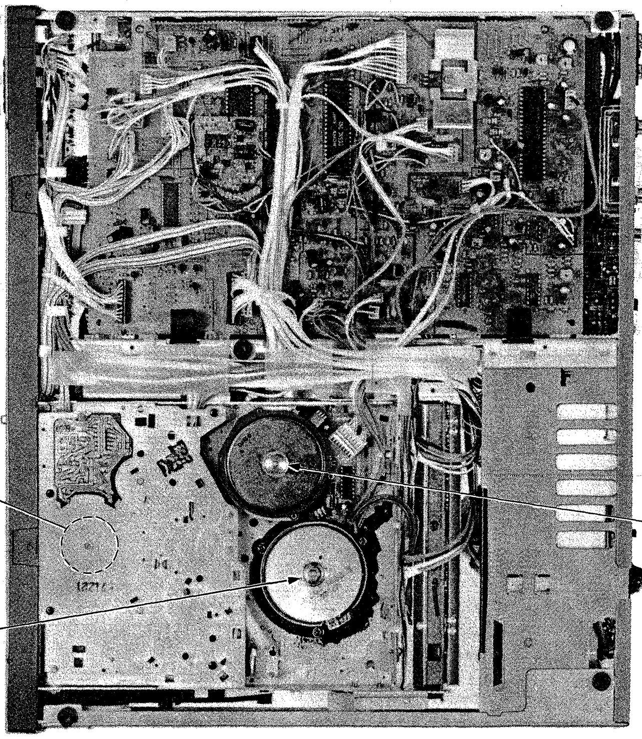
Note: Be sure to rotate the loading gear with your fingers without using a screwdriver.

1-21. INTERNAL VIEWS

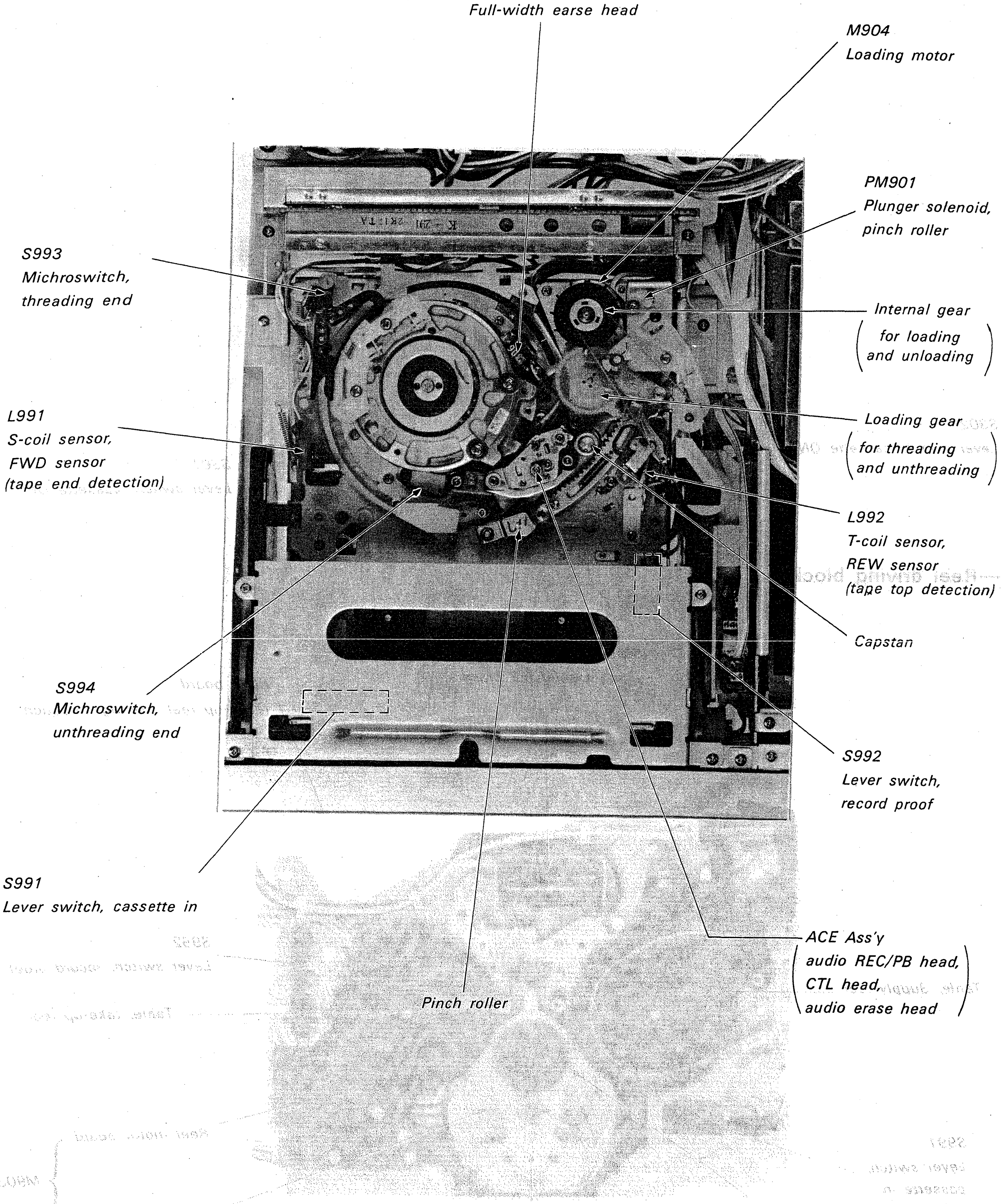
—Top side—


F101
Fuse, 3.15A
F102
Fuse, 2A
MD001
RF moderator (RFU-702)
S996
Switch, antenna selector
T901
Power transformer
TB991
Antenna terminal Ass'y
F1
Fuse, 2A
Tuner (BT864) ... FORMER
Tuner (BT892) ... NEW
(photo of the BT864)
S001
Lever Switch, AFT
PS001
Preset VR block

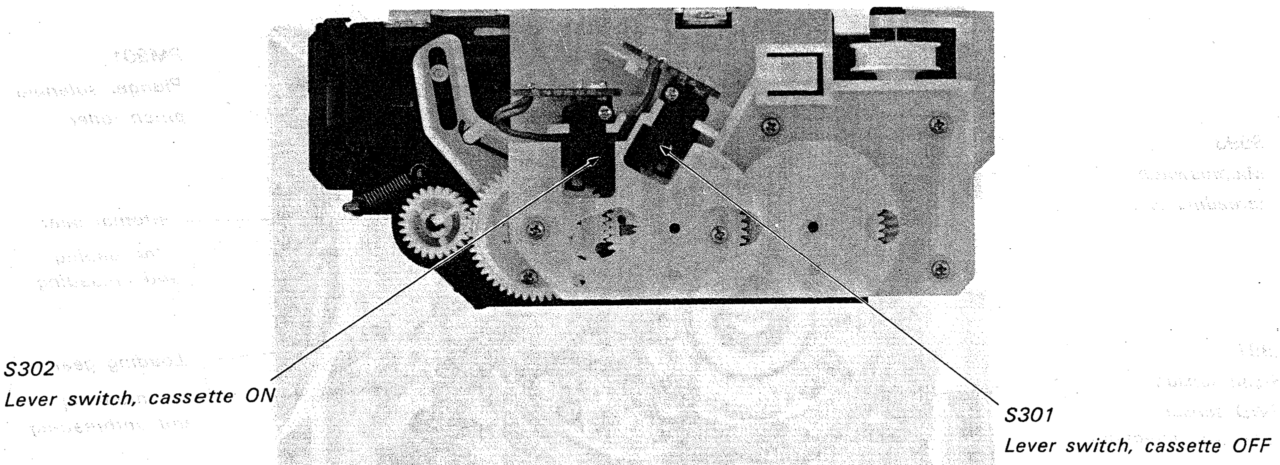
—Bottom side—


M903
Reel motor Ass'y
M902
Capstan motor Ass'y
M901
Drum motor Ass'y

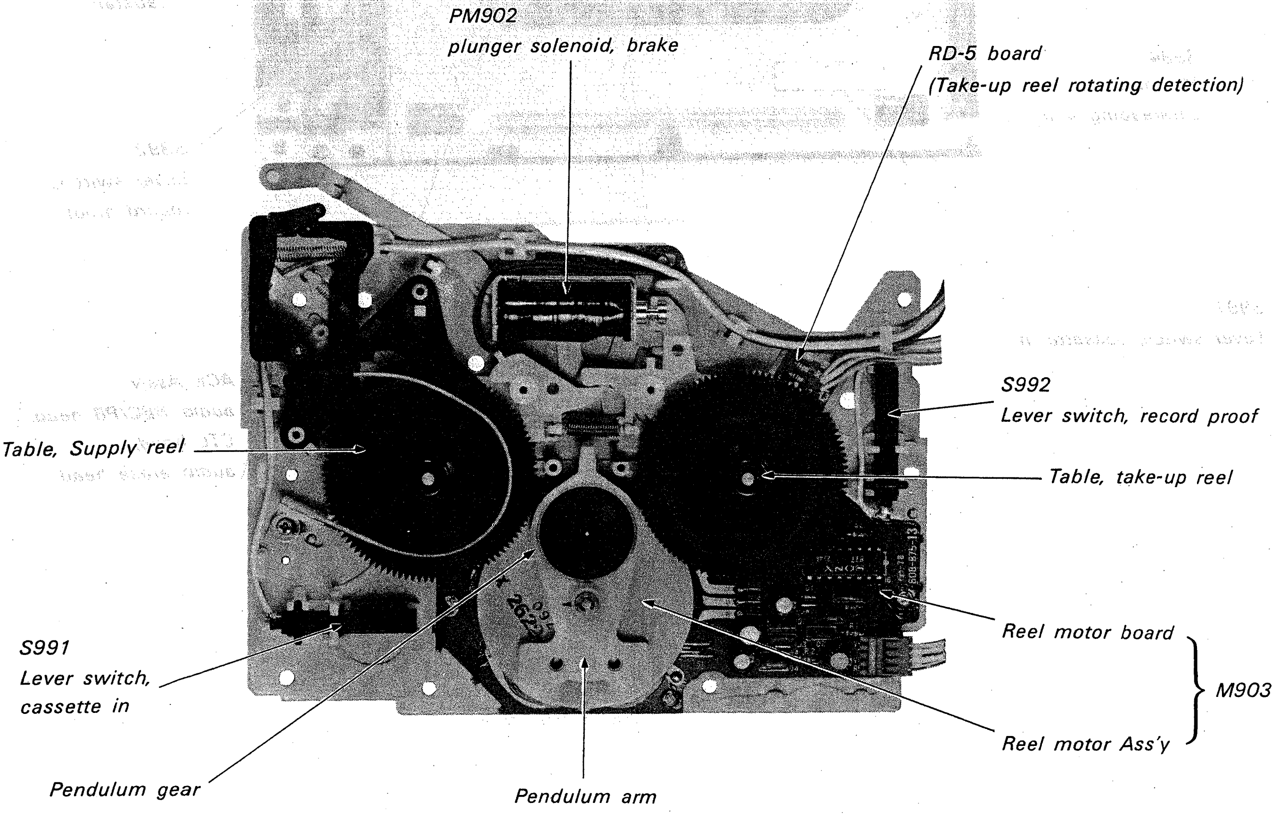
—Mechanical block—


Full-width earse head
M904
Loading motor
PM901
Plunger solenoid,
pinch roller
S993
Michroswitch,
threading end
Internal gear
(for loading
and unloading)
L991
S-coil sensor,
FWD sensor
(tape end detection)
Loading gear
(for threading
and unthreading)
L992
T-coil sensor,
REW sensor
(tape top detection)
Capstan
S994
Michroswitch,
unthreading end
S992
Lever switch,
record proof
S991
Lever switch, cassette in
ACE Ass'y
(audio REC/PB head,
CTL head,
audio erase head)
Pinch roller

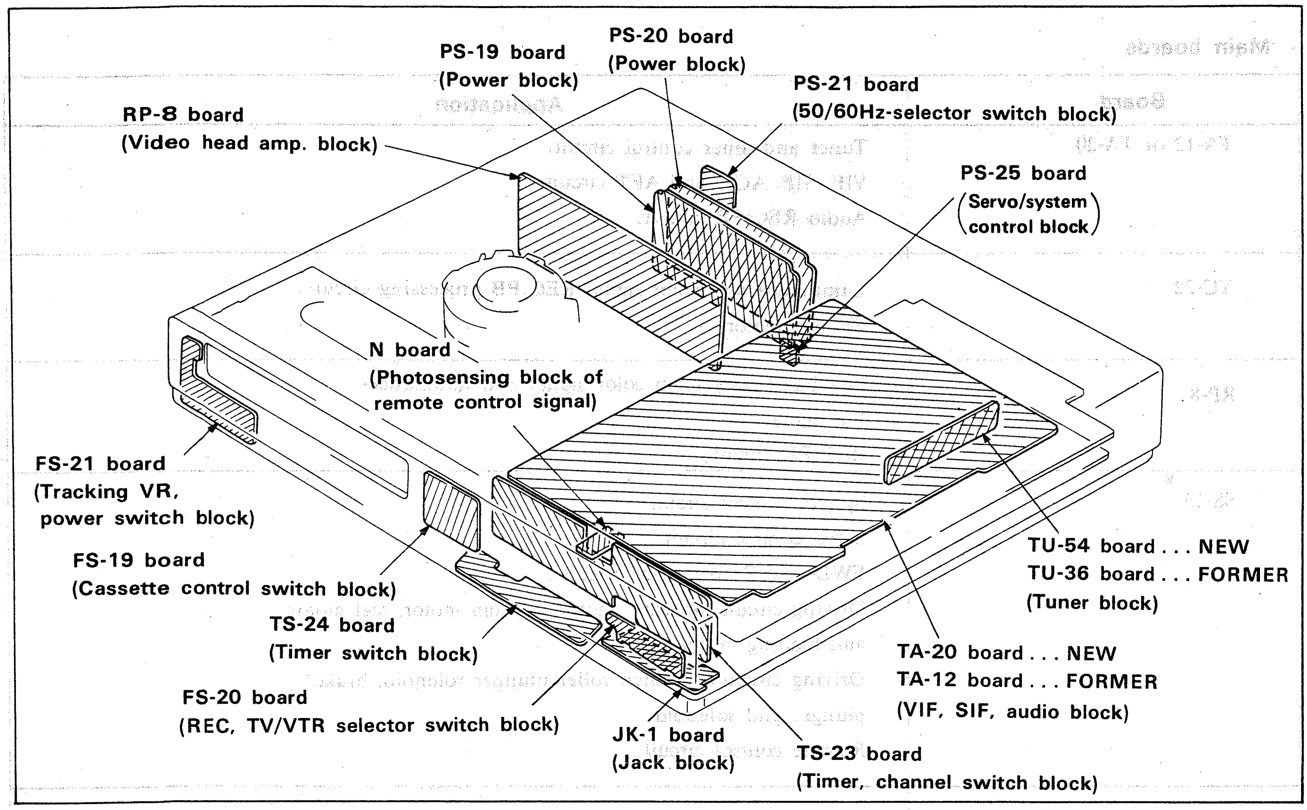
—FL (Front Loading) cassette compartment Ass'y—

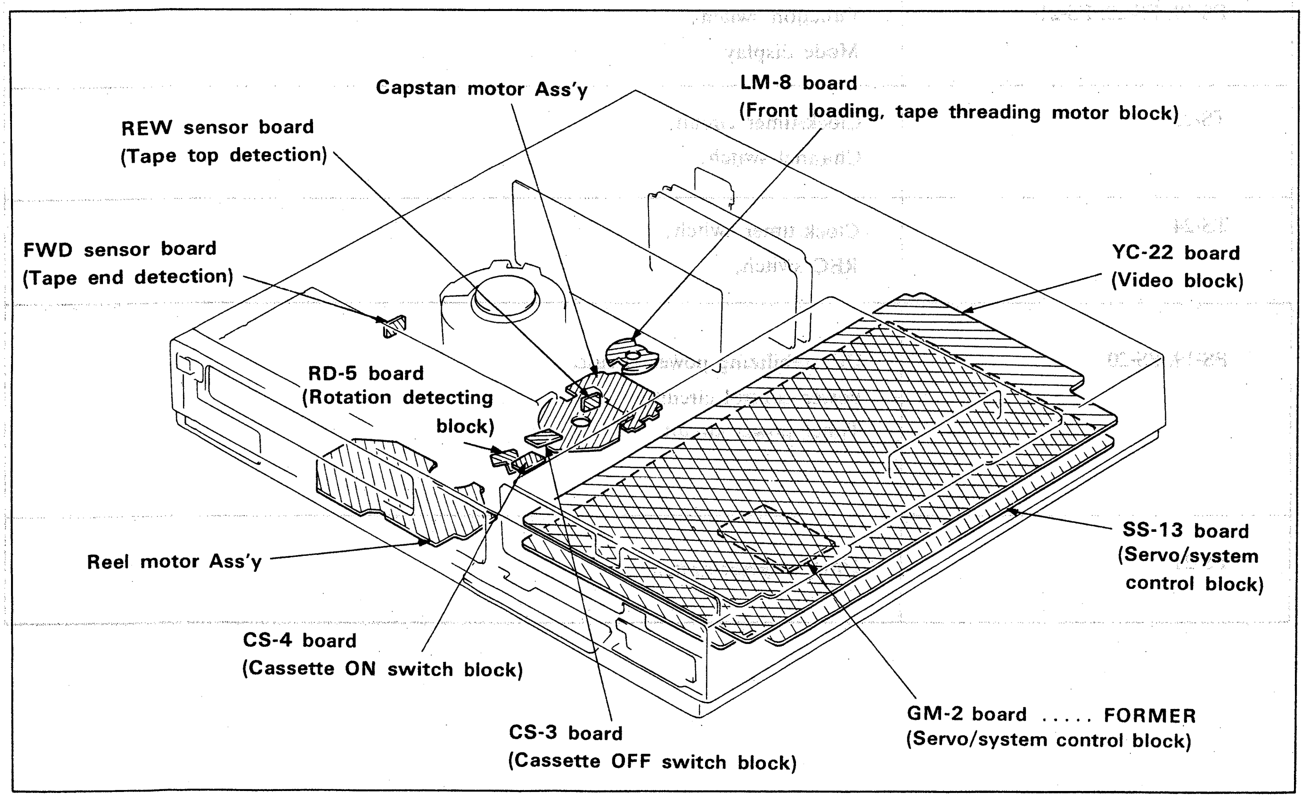

S302
Lever switch, cassette ON
S301
Lever switch, cassette OFF

—Reel driving block—


PM902
plunger solenoid, brake
RD-5 board
(Take-up reel rotating detection)
S992
Lever switch, record proof
Table, Supply reel
Table, take-up reel
Reel motor board
M903
Reel motor Ass'y
S991
Lever switch, cassette in
Pendulum gear
Pendulum arm

1-22. BOARD ARRANGEMENT


PS-19 board
(Power block)
PS-20 board
(Power block)
RP-8 board
(Video head amp. block)
PS-21 board
(50/60Hz-selector switch block)
PS-25 board
(Servo/system control block)
N board
(Photosensing block of remote control signal)
FS-21 board
(Tracking VR, power switch block)
FS-19 board
(Cassette control switch block)
TS-24 board
(Timer switch block)
FS-20 board
(REC, TV/VTR selector switch block)
JK-1 board
(Jack block)
TS-23 board
(Timer, channel switch block)
TU-54 board . . . NEW
TU-36 board . . . FORMER
(Tuner block)
TA-20 board . . . NEW
TA-12 board . . . FORMER
(VIF, SIF, audio block)


Capstan motor Ass'y
LM-8 board
(Front loading, tape threading motor block)
REW sensor board
(Tape top detection)
FWD sensor board
(Tape end detection)
YC-22 board
(Video block)
RD-5 board
(Rotation detecting block)
Reel motor Ass'y
SS-13 board
(Servo/system control block)
CS-4 board
(Cassette ON switch block)
CS-3 board
(Cassette OFF switch block)
GM-2 board ..... FORMER
(Servo/system control block)

1-23. CONFIGURATION OF MAIN BOARDS AND APPLICATION OF ICs

- **Main boards**

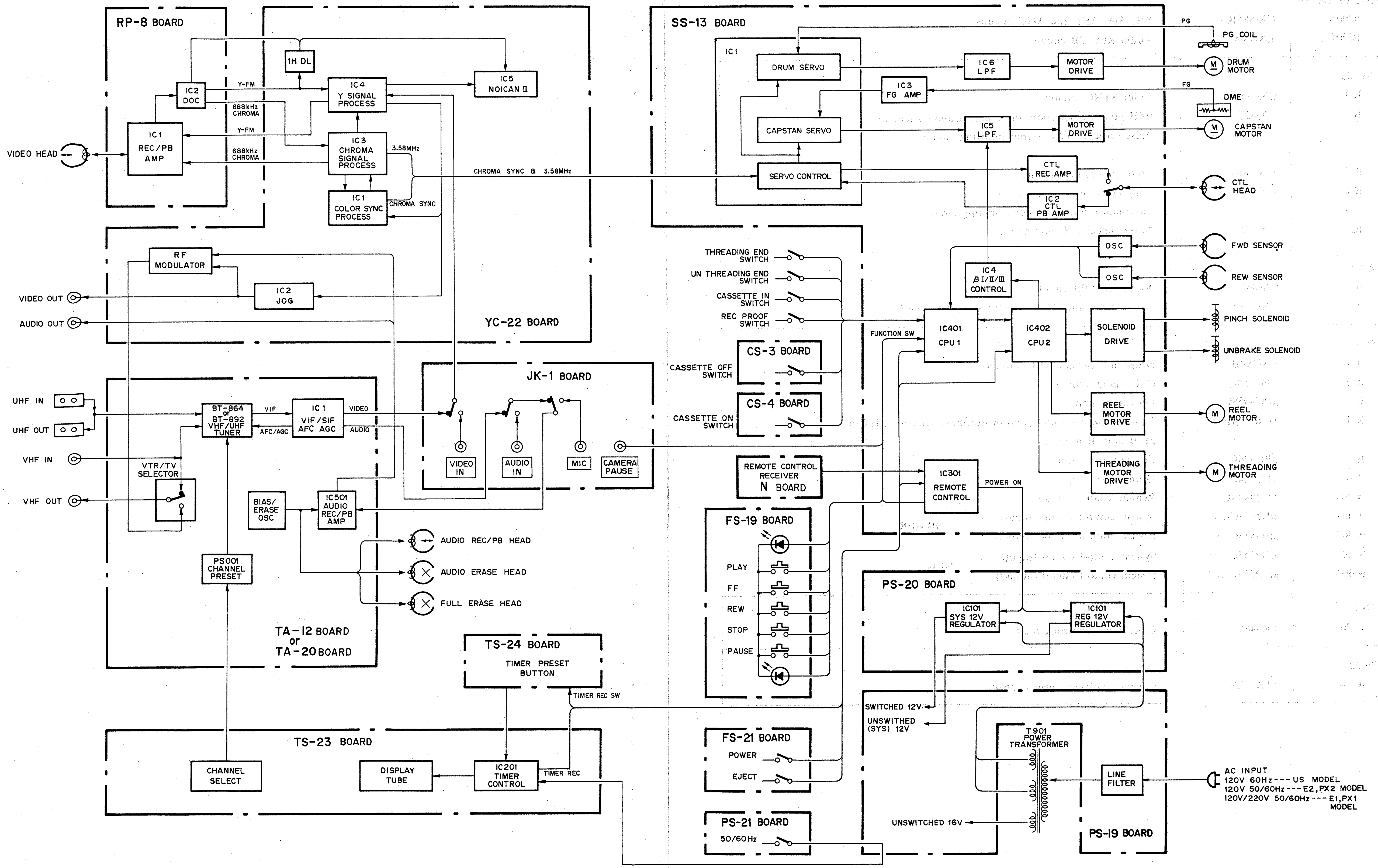
Board	Application
TA-12 or TA-20	Tuner and tuner control circuit. VIF, SIF, AGC and AFT circuits. Audio REC/PB circuit.
YC-22	Luminance and color signal REC/PB processing circuit. RF modulator.
RP-8	Low-band conversion color signal and luminance-FM signal. REC/PB circuit.
SS-13	System control circuit. Servo control circuit. FWD and REW sensor circuits. Driving circuit for drum motor, capstan motor, reel motor and loading motor. Driving circuit for pinch roller plunger solenoid, brake plunger and solenoid. Remote control circuit.
N	Remote control photosensor circuit.
FS-19, FS-20, FS-21	Function switch. Mode display.
TS-23	Clock/timer circuit. Channel switch.
TS-24	Clock/timer switch. REC switch.
PS-19, PS-20	DC stabilizing power circuit. Power control circuit. Timer power circuit.
PS-21	Timer selector switch.

• **Application of ICs**

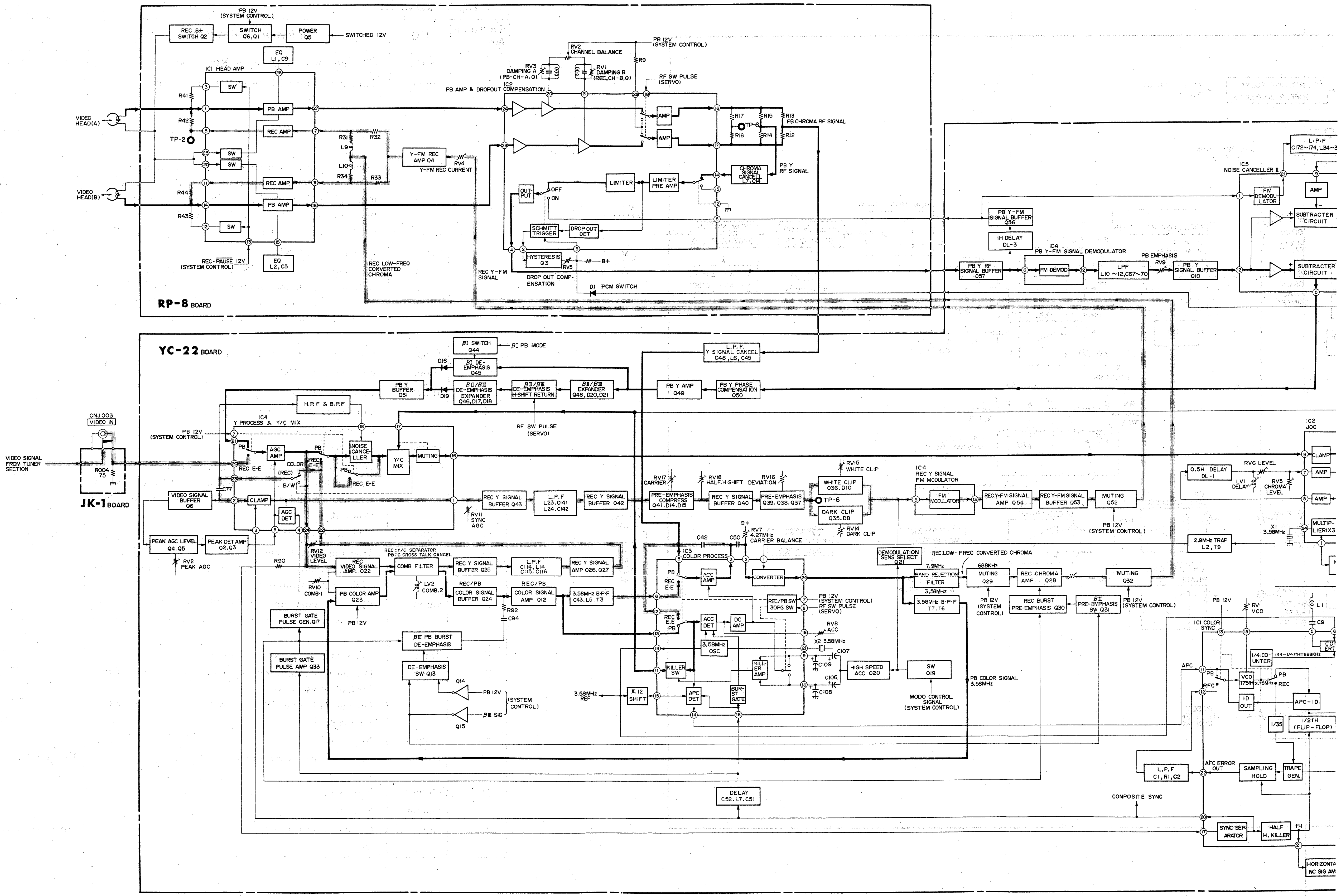
Board	Name	Application
TA-12 or TA-20		
IC001	CX-885B	VIF. SIF. AFT and AGC circuits.
IC501	LA7046	Audio REC/PB circuit.
YC-22		
IC1	CX-196	Color SYNC circuit.
IC2	CX-822	0.5H-jumping detection and compensation circuits. False-vertical SYNC signal inserting circuit.
IC3	CX-188	Color processing circuit.
IC4	CX-187	Luminance processing circuit. Luminance and color signal mixing circuit.
IC5	CX-135	Noise canceler II (luminance).
RP-8		
IC1	CX-862	Video REC/PB circuit.
IC2	CX-134A	RF switcher and drop-out compensating circuit.
SS-13		
IC1	CX-194B	Drum and capstan servo circuits.
IC2	μPC358C	CTL signal amp.
IC3	μPC4558C	FG signal amp.
IC4	TC4053BP	Capstan speed selecting and drum phase selecting (fH). in βI. II and III modes.
IC5	μPC324C	Capstan servo amp.
IC6	μPC324C	Drum servo amp.
IC301	M32080SL	Remote control circuit.
IC401	μPD553C-261	System control circuit (input). } .... FORMER
IC402	μPD553C-262	System control circuit (output). } .... FORMER
IC401	μPD553C-276	System control circuit (input). } .... NEW
IC402	μPD553C-287	System control circuit (output). } .... NEW
TS-23		
IC201	LR3466	Clock/timer control circuit.
PS-20		
IC101	STK-5324	Constant voltage/power control.

SECTION 2
BLOCK DIAGRAM

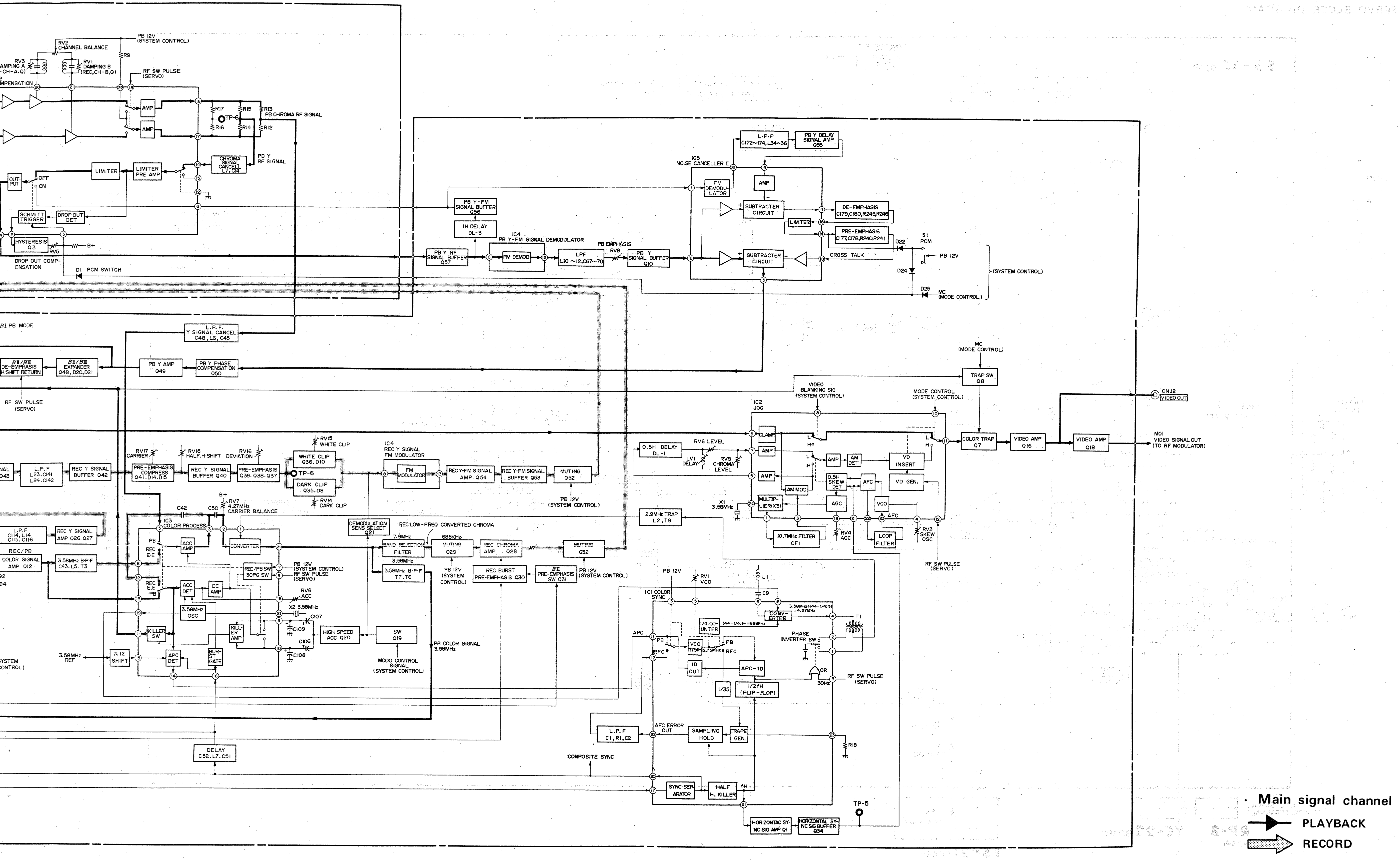
OVERALL BLOCK DIAGRAM


RP-8 BOARD
IC2
DOC
IC1
REC/PB
AMP
VIDEO HEAD
Y-FM
688kHz CHROMA
Y-FM
688kHz CHROMA
1H DL
IC4
Y SIGNAL
PROCESS
IC5
NOICAN II
IC3
CHROMA
SIGNAL
PROCESS
3.58MHz
IC1
COLOR SYNC
PROCESS
CHROMA SYNC
CHROMA SYNC & 3.58MHz
RF
MODULATOR
IC2
JOG
VIDEO OUT
AUDIO OUT
YC-22 BOARD
UHF IN
UHF OUT
VHF IN
VHF OUT
VTR/TV
SELECTOR
BT-864
or
BT-892
VHF/UHF
TUNER
VIF
AFC/AGC
IC1
VIF/SIF
AFC AGC
VIDEO
AUDIO
BIAS/
ERASE
OSC
IC501
AUDIO
REC/PB
AMP
PS001
CHANNEL
PRESET
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
TA-12 BOARD
or
TA-20 BOARD
JK-1 BOARD
VIDEO
IN
AUDIO
IN
MIC
CAMERA
PAUSE
TS-24 BOARD
TIMER PRESET
BUTTON
TIMER REC SW
TS-23 BOARD
CHANNEL
SELECT
DISPLAY
TUBE
IC201
TIMER
CONTROL
TIMER REC
SS-13 BOARD
IC1
DRUM SERVO
CAPSTAN SERVO
SERVO CONTROL
IC3
FG AMP
IC6
LPF
IC5
LPF
MOTOR
DRIVE
MOTOR
DRIVE
CTL
REC AMP
IC2
CTL
PB AMP
PG
PG COIL
DRUM
MOTOR
FG
DME
CAPSTAN
MOTOR
CTL
HEAD
OSC
OSC
FWD SENSOR
REW SENSOR
IC4
β I/II/III
CONTROL
THREADING END
SWITCH
UN THREADING END
SWITCH
CASSETTE IN
SWITCH
REC PROOF
SWITCH
FUNCTION SW
IC401
CPU 1
IC402
CPU 2
SOLENOID
DRIVE
PINCH SOLENOID
UNBRAKE SOLENOID
CS-3 BOARD
CASSETTE OFF
SWITCH
CS-4 BOARD
CASSETTE ON
SWITCH
REEL
MOTOR
DRIVE
REEL
MOTOR
THREADING
MOTOR
DRIVE
THREADING
MOTOR
M
REMOTE CONTROL
RECEIVER
N BOARD
IC301
REMOTE
CONTROL
POWER ON
FS-19 BOARD
PLAY
FF
REW
STOP
PAUSE
PS-20 BOARD
IC101
SYS 12V
REGULATOR
IC101
REG 12V
REGULATOR
SWITCHED 12V
UNSWITHED
(SYS) 12V
T901
POWER
TRANSFORMER
LINE
FILTER
UNSWITCHED 16V
PS-19 BOARD
AC INPUT
120V 60Hz---US MODEL
120V 50/60Hz---E2,PX2 MODEL
120V/220V 50/60Hz---E1,PX1
MODEL
FS-21 BOARD
POWER
EJECT
PS-21 BOARD
50/60Hz

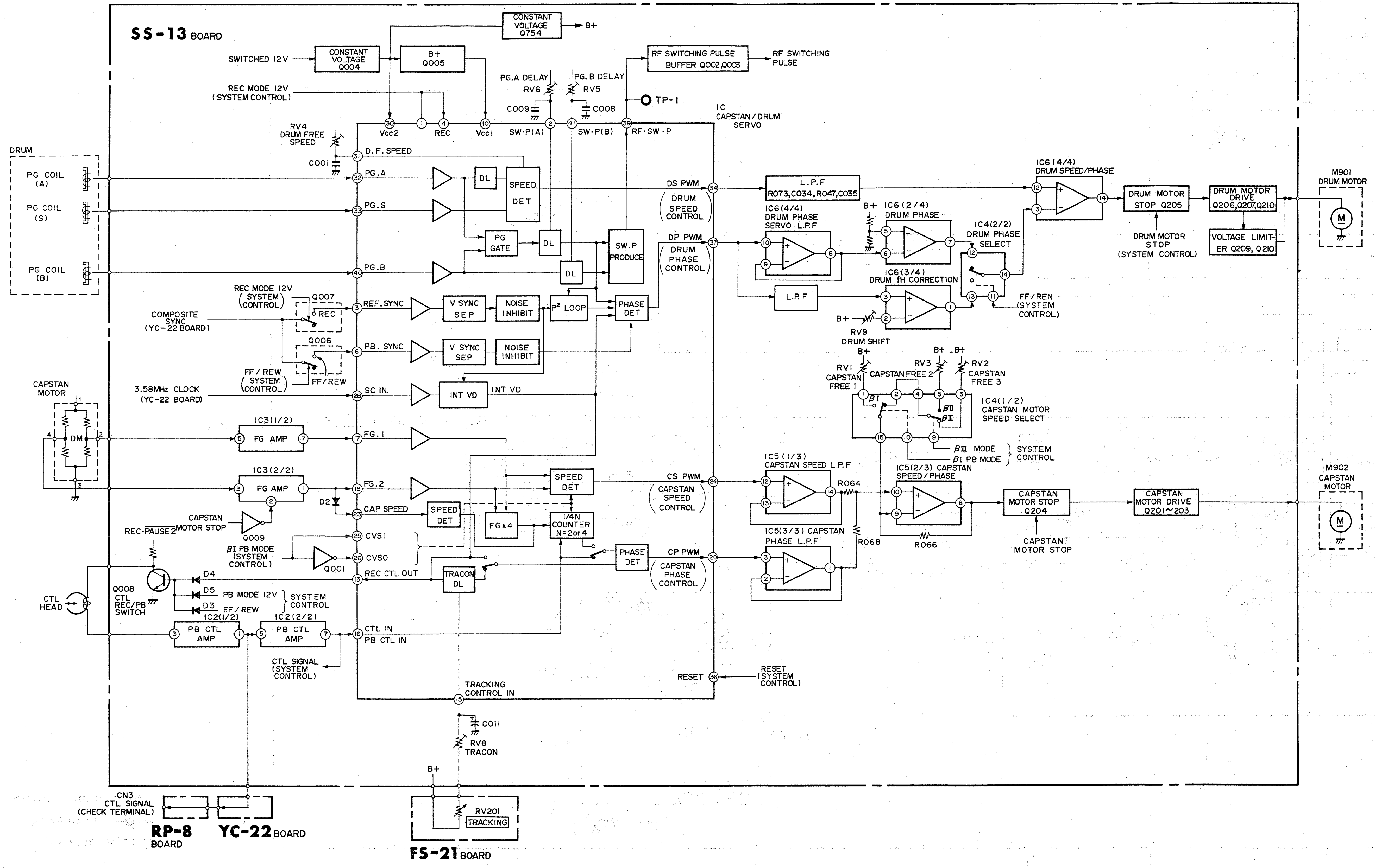
VIDEO BLOCK DIAGRAM



RP-8 BOARD
YC-22 BOARD
JK-1 BOARD
VIDEO HEAD(A)
VIDEO HEAD(B)
TP-2
PB 12V (SYSTEM CONTROL)
REC B+ SWITCH Q2
SWITCH Q6,Q1
POWER Q5
SWITCHED 12V
EQ L1,C9
IC1 HEAD AMP
SW
PB AMP
REC AMP
EQ L2,C5
REC·PAUSE 12V (SYSTEM CONTROL)
R41
R42
R43
R44
R31
R32
R33
R34
L9
L10
Y-FM REC AMP Q4
RV4
Y-FM REC CURRENT
REC LOW-FREQ CONVERTED CHROMA
REC Y-FM SIGNAL
PB AMP & DROPOUT COMPENSATION
IC2
RV3 DAMPING A (PB·CH-A.Q)
RV2 CHANNEL BALANCE
RV1 DAMPING B (REC,CH-B,Q)
PB 12V (SYSTEM CONTROL)
R9
RF SW PULSE (SERVO)
AMP
R17
R15
R13
R16
R14
R12
TP-6
PB CHROMA RF SIGNAL
PB Y RF SIGNAL
CHROMA SIGNAL CANCELL L7,C42
LIMITER
LIMITER PRE AMP
OUT-PUT
OFF
ON
SCHMITT TRIGGER
DROP OUT DET
HYSTERESIS Q3
RV5
B+
DROP OUT COMPENSATION
D1 PCM SWITCH
PB Y-FM SIGNAL BUFFER Q56
1H DELAY DL-3
IC4 PB Y-FM SIGNAL DEMODULATOR
PB Y RF SIGNAL BUFFER Q57
FM DEMOD
LPF L10~12,C67~70
PB EMPHASIS RV9
PB Y SIGNAL BUFFER Q10
IC5 NOISE CANCELLER II
FM DEMODU-LATOR
AMP
SUBTRACTER CIRCUIT
L·P·F C172~174,L34~3
βI SWITCH Q44
βI PB MODE
D16
βI DE-EMPHASIS Q45
D19
βII/βIII DE-EMPHASIS EXPANDER Q46,D17,D18
βII/βIII DE-EMPHASIS H-SHIFT RETURN
βII/βIII EXPANDER Q48,D20,D21
RF SW PULSE (SERVO)
L.P.F. Y SIGNAL CANCEL C48,L6,C45
PB Y AMP Q49
PB Y PHASE COMPENSATION Q50
PB Y BUFFER Q51
H.P.F & B.P.F
IC4 Y PROCESS & Y/C MIX
CNJ003 VIDEO IN
VIDEO SIGNAL FROM TUNER SECTION
R004 75
PB 12V (SYSTEM CONTROL)
AGC AMP
NOISE CANCELLER
Y/C MIX
MUTING
COLOR (REC)
B/W
REC E-E
PB
C77
VIDEO SIGNAL BUFFER Q6
CLAMP
AGC DET
PEAK AGC LEVEL Q4,Q5
PEAK DET AMP Q2,Q3
RV2 PEAK AGC
RV11 SYNC AGC
REC Y SIGNAL BUFFER Q43
L.P.F L23,C141 L24,C142
REC Y SIGNAL BUFFER Q42
RV17 CARRIER
RV18 HALF.H-SHIFT
RV16 DEVIATION
PRE-EMPHASIS COMPRESS Q41,D14,D15
REC Y SIGNAL BUFFER Q40
PRE-EMPHASIS Q39,Q38,Q37
RV15 WHITE CLIP
WHITE CLIP Q36,D10
DARK CLIP Q35,D8
RV14 DARK CLIP
IC4 REC Y SIGNAL FM MODULATOR
FM MODULATOR
REC Y-FM SIGNAL AMP Q54
REC Y-FM SIGNAL BUFFER Q53
MUTING Q52
PB 12V (SYSTEM CONTROL)
B+
RV7 4.27MHz CARRIER BALANCE
C42
C50
RV12 VIDEO LEVEL
R90
REC:Y/C SEPARATOR PB:C CROSS TALK CANCEL
REC VIDEO SIGNAL AMP. Q22
COMB FILTER
REC Y SIGNAL BUFFER Q25
L.P.F C114,L14 C115,C116
REC Y SIGNAL AMP Q26,Q27
RV10 COMB-1
LV2 COMB.2
PB COLOR AMP Q23
REC/PB COLOR SIGNAL BUFFER Q24
REC/PB COLOR SIGNAL AMP Q12
3.58MHz B·P·F C43,L5,T3
R92
C94
PB 12V
BURST GATE PULSE GEN.Q17
BURST GATE PULSE AMP Q33
βII PB BURST DE-EMPHASIS
DE-EMPHASIS SW Q13
Q14
Q15
PB 12V (SYSTEM CONTROL)
βII SIG
IC3 COLOR PROCESS
PB
REC E·E
ACC AMP
CONVERTER
REC/PB SW 30PG SW
PB 12V (SYSTEM CONTROL)
RF SW PULSE (SERVO)
ACC DET
DC AMP
RV8 ACC
X2 3.58MHz
3.58MHz OSC
C107
C109
C106
C108
KILLER SW
KILLER AMP
HIGH SPEED ACC Q20
SW Q19
MODE CONTROL SIGNAL (SYSTEM CONTROL)
3.58MHz REF
π/2 SHIFT
APC DET
BURST GATE
PB COLOR SIGNAL 3.58MHz
DEMODULATION SENS SELECT Q21
REC LOW-FREQ CONVERTED CHROMA
7.9MHz
BAND REJECTION FILTER
688KHz
MUTING Q29
REC CHROMA AMP Q28
MUTING Q32
3.58MHz
3.58MHz B·P·F T7,T6
PB 12V (SYSTEM CONTROL)
REC BURST PRE-EMPHASIS Q30
βII PRE-EMPHASIS SW Q31
PB 12V (SYSTEM CONTROL)
DELAY C52,L7,C51
IC2 JOG
CLAMP
AMP
0.5H DELAY DL-1
RV6 LEVEL
LV1 DELAY
RV5 CHROMA LEVEL
X1 3.58MHz
MULTIPLIER X3
2.9MHz TRAP L2,T9
PB 12V
RV1 VCO
L1
C9
IC1 COLOR SYNC
APC
PB
REC
1/4 COUNTER (44-1/4)fH=688KHz
VCO 175fH 2.75MHz
ID OUT
APC-ID
1/35
1/2fH (FLIP-FLOP)
AFC ERROR OUT
L.P.F C1,R1,C2
SAMPLING HOLD
TRAPE GEN.
COMPOSITE SYNC
SYNC SEPARATOR
HALF H. KILLER
fH
HORIZONTAL NC SIG AM

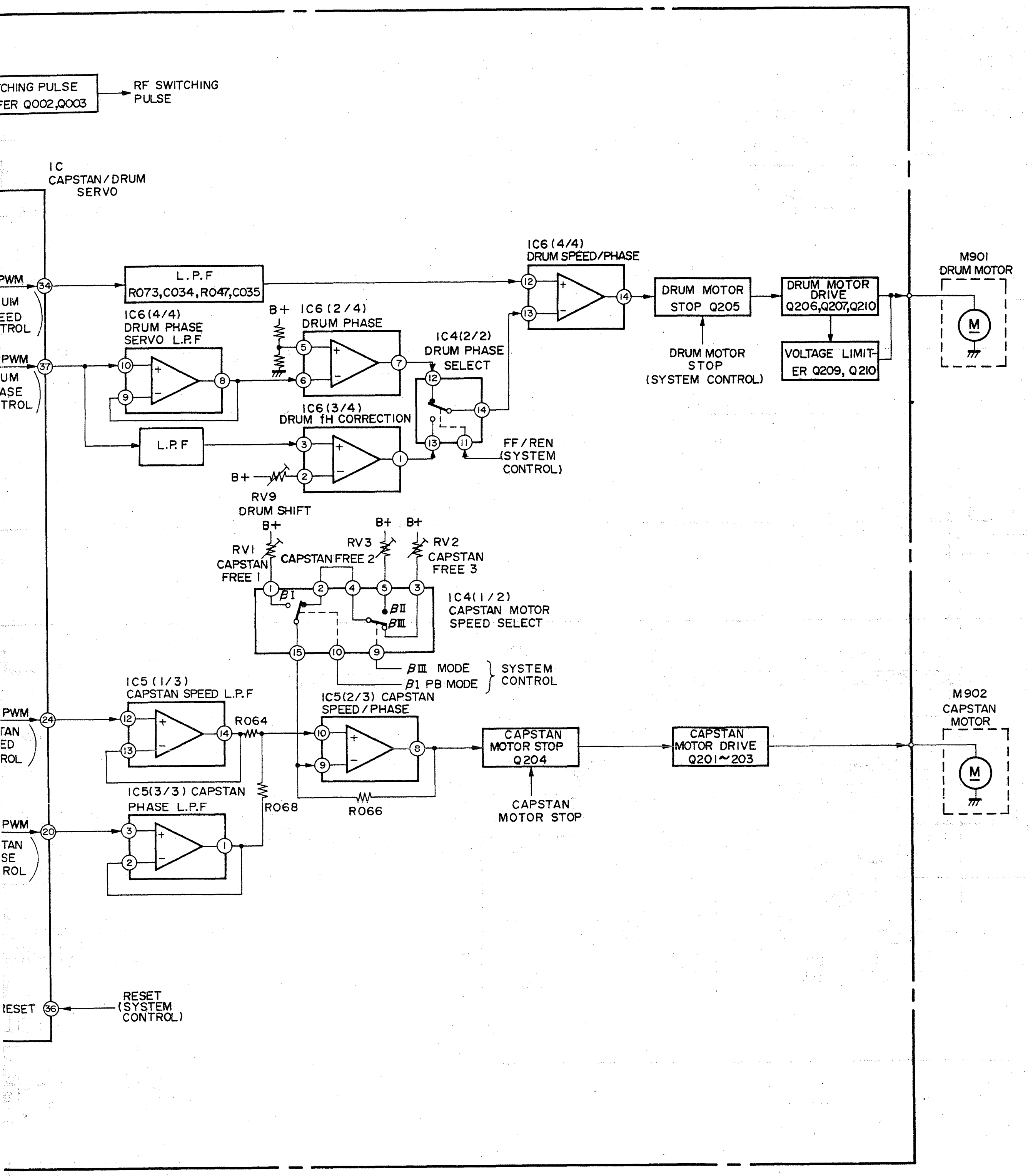

RV2 CHANNEL BALANCE
PB 12V (SYSTEM CONTROL)
RV3 AMPING A (-CH-A.Q)
RV1 DAMPING B (REC,CH-B,Q)
R9
RF SW PULSE (SERVO)
MPENSATION
AMP
R17
R15
R13
PB CHROMA RF SIGNAL
TP-6
R16
R14
R12
CHROMA SIGNAL CANCELL L7,C11
PB Y RF SIGNAL
LIMITER
LIMITER PRE AMP
OUT-PUT
OFF
ON
SCHMITT TRIGGER
DROP OUT DET
HYSTERESIS Q3
RV5
B+
DROP OUT COMPENSATION
D1 PCM SWITCH
B1 PB MODE
L.P.F. Y SIGNAL CANCEL C48, L6, C45
BI/BII DE-EMPHASIS H-SHIFT RETURN
BI/BII EXPANDER Q48, D20, D21
PB Y AMP Q49
PB Y PHASE COMPENSATION Q50
RF SW PULSE (SERVO)
PB Y-FM SIGNAL BUFFER Q56
1H DELAY DL-3
IC4 PB Y-FM SIGNAL DEMODULATOR
PB Y RF SIGNAL BUFFER Q57
FM DEMOD
PB EMPHASIS RV9
LPF L10~12,C67~70
PB Y SIGNAL BUFFER Q10
IC5 NOISE CANCELLER II
L.P.F C172~174, L34~36
PB Y DELAY SIGNAL AMP Q55
FM DEMODULATOR
AMP
SUBTRACTER CIRCUIT
LIMITER
DE-EMPHASIS C179,C180,R245,R246
PRE-EMPHASIS C177,C178,R240,R241
D22
S1 PCM
PB 12V
CROSS TALK
D24
D25
(SYSTEM CONTROL)
MC (MODE CONTROL)
NAL Q43
L.P.F L23,C141 L24,C142
REC Y SIGNAL BUFFER Q42
RV17 CARRIER
RV18 HALF.H.SHIFT
RV16 DEVIATION
PRE-EMPHASIS COMPRESS Q41,D14,D15
REC Y SIGNAL BUFFER Q40
PRE-EMPHASIS Q39,Q38,Q37
RV15 WHITE CLIP
WHITE CLIP Q36,D10
TP-6
DARK CLIP Q35,D8
RV14 DARK CLIP
IC4 REC Y SIGNAL FM MODULATOR
FM MODULATOR
REC Y-FM SIGNAL AMP Q54
REC Y-FM SIGNAL BUFFER Q53
MUTING Q52
PB 12V (SYSTEM CONTROL)
B+
RV7 4.27MHz CARRIER BALANCE
C42
C50
IC3 COLOR PROCESS
L.P.F C114, L14 C115, C116
REC Y SIGNAL AMP Q26, Q27
REC/PB
COLOR SIGNAL AMP Q12
3.58MHz B-P-F C43, L5, T3
PB
REC E·E
ACC AMP
CONVERTER
REC/PB SW 30PG SW
PB 12V (SYSTEM CONTROL)
RF SW PULSE (SERVO)
ACC DET
DC AMP
RV8 ACC
3.58MHz OSC
X2 3.58MHz
C107
C109
C106
C108
KILLER SW
KILLER AMP
HIGH SPEED ACC Q20
SW Q19
MODO CONTROL SIGNAL (SYSTEM CONTROL)
PB COLOR SIGNAL 3.58MHz
SYSTEM CONTROL)
3.58MHz REF
π/2 SHIFT
APC DET
BURST GATE
DELAY C52, L7, C51
DEMODULATION SENS SELECT Q21
REC LOW-FREQ CONVERTED CHROMA
7.9MHz
688KHz
BAND REJECTION FILTER
MUTING Q29
REC CHROMA AMP Q28
MUTING Q32
3.58MHz
3.58MHz B-P-F T7, T6
PB 12V (SYSTEM CONTROL)
REC BURST PRE-EMPHASIS Q30
BII PRE-EMPHASIS SW Q31
PB 12V (SYSTEM CONTROL)
MC (MODE CONTROL)
TRAP SW Q8
VIDEO BLANKING SIG (SYSTEM CONTROL)
MODE CONTROL (SYSTEM CONTROL)
IC2 JOG
CLAMP
AMP
0.5H DELAY DL-1
RV6 LEVEL
LV1 DELAY
RV5 CHROMA LEVEL
AM DET
VD INSERT
0.5H SKEW DET
AFC
VD GEN.
AM MOD
MULTIPLIER(X3)
AGC
VCO
X1 3.58MHz
10.7MHz FILTER CF1
RV4 AGC
LOOP FILTER
RV3 SKEW OSC
RF SW PULSE (SERVO)
COLOR TRAP Q7
VIDEO AMP Q16
VIDEO AMP Q18
CNJ2 VIDEO OUT
M01 VIDEO SIGNAL OUT (TO RF MODULATOR)
2.9MHz TRAP L2, T9
PB 12V
RV1 VCO
L1
C9
IC1 COLOR SYNC
3.58MHz+(44-1/4)fH =4.27MHz
CONVERTER
T1
APC
1/4 COUNTER
(44-1/4)fH=688KHz
PHASE INVERTER SW
VCO 175fH 2.75MHz
PB
REC
ID OUT
APC-ID
OR
30Hz
RF SW PULSE (SERVO)
1/35
1/2fH (FLIP-FLOP)
L.P.F C1, R1, C2
AFC ERROR OUT
SAMPLING HOLD
TRAPE GEN.
R18
COMPOSITE SYNC
SYNC SEPARATOR
HALF H. KILLER
fH
TP-5
HORIZONTAC SYNC SIG AMP Q1
HORIZONTAL SYNC SIG BUFFER Q34
· Main signal channel
PLAYBACK
RECORD

SERVO BLOCK DIAGRAM

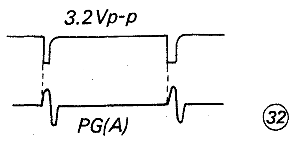
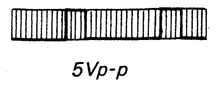
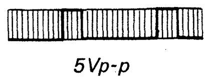
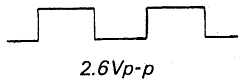
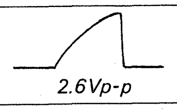
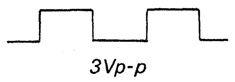
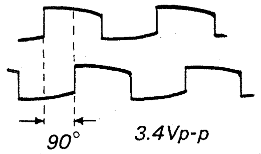

SS-13 BOARD
CONSTANT VOLTAGE Q754
B+
SWITCHED 12V
CONSTANT VOLTAGE Q004
B+ Q005
RF SWITCHING PULSE BUFFER Q002,Q003
RF SWITCHING PULSE
REC MODE 12V (SYSTEM CONTROL)
PG.A DELAY RV6
PG.B DELAY RV5
C009
C008
TP-1
IC CAPSTAN/DRUM SERVO
RV4 DRUM FREE SPEED
Vcc2
REC
Vcc1
SW·P(A)
SW·P(B)
RF·SW·P
C001
D.F. SPEED
DRUM
PG COIL (A)
PG COIL (S)
PG COIL (B)
PG.A
PG.S
PG.B
DL
SPEED DET
PG GATE
DL
DL
SW.P PRODUCE
DS PWM
DRUM SPEED CONTROL
DP PWM
DRUM PHASE CONTROL
REC MODE 12V (SYSTEM CONTROL)
Q007
REC
COMPOSITE SYNC (YC-22 BOARD)
Q006
FF/REW (SYSTEM CONTROL)
FF/REW
REF. SYNC
PB. SYNC
V SYNC SEP
NOISE INHIBIT
P² LOOP
PHASE DET
V SYNC SEP
NOISE INHIBIT
3.58MHz CLOCK (YC-22 BOARD)
SC IN
INT VD
INT VD
CAPSTAN MOTOR
DM
IC3(1/2)
FG AMP
FG. 1
IC3(2/2)
FG AMP
FG. 2
D2
CAP SPEED
SPEED DET
SPEED DET
FGx4
1/4N COUNTER N=2or4
CS PWM
CAPSTAN SPEED CONTROL
CAPSTAN MOTOR STOP
REC·PAUSE 2
Q009
β I PB MODE (SYSTEM CONTROL)
CVS I
CVSO
Q001
PHASE DET
CP PWM
CAPSTAN PHASE CONTROL
Q008 CTL REC/PB SWITCH
D4
D5
PB MODE 12V
D3
FF/REW
SYSTEM CONTROL
REC CTL OUT
TRACON DL
CTL HEAD
IC2(1/2)
PB CTL AMP
IC2(2/2)
PB CTL AMP
CTL IN
PB CTL IN
CTL SIGNAL (SYSTEM CONTROL)
RESET
RESET (SYSTEM CONTROL)
TRACKING CONTROL IN
C011
RV8 TRACON
B+
CN3 CTL SIGNAL (CHECK TERMINAL)
RP-8 BOARD
YC-22 BOARD
RV201 TRACKING
FS-21 BOARD
L.P.F R073,C034,R047,C035
IC6(4/4) DRUM PHASE SERVO L.P.F
B+
IC6(2/4) DRUM PHASE
IC4(2/2) DRUM PHASE SELECT
IC6(3/4) DRUM fH CORRECTION
L.P.F
FF/REN (SYSTEM CONTROL)
B+
RV9 DRUM SHIFT
IC6(4/4) DRUM SPEED/PHASE
DRUM MOTOR STOP Q205
DRUM MOTOR STOP (SYSTEM CONTROL)
DRUM MOTOR DRIVE Q206,Q207,Q210
VOLTAGE LIMITER Q209, Q210
M901 DRUM MOTOR
M
B+
RV1 CAPSTAN FREE 1
RV3 CAPSTAN FREE 2
RV2 CAPSTAN FREE 3
β I
β II
β III
IC4(1/2) CAPSTAN MOTOR SPEED SELECT
β III MODE
β I PB MODE
SYSTEM CONTROL
IC5(1/3) CAPSTAN SPEED L.P.F
R064
IC5(2/3) CAPSTAN SPEED/PHASE
R068
IC5(3/3) CAPSTAN PHASE L.P.F
R066
CAPSTAN MOTOR STOP Q204
CAPSTAN MOTOR STOP
CAPSTAN MOTOR DRIVE Q201~203
M902 CAPSTAN MOTOR
M

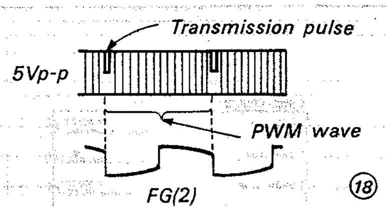
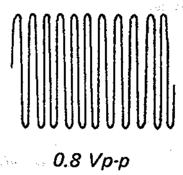
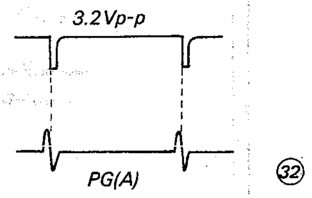
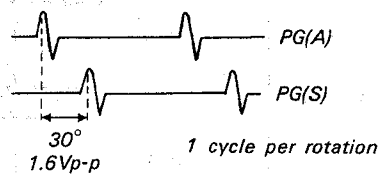
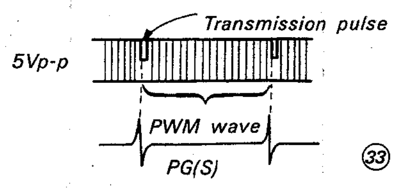
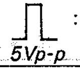
IC 1

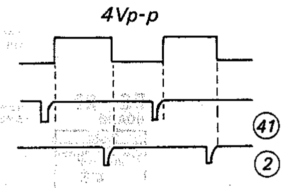
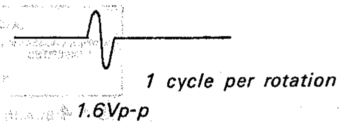
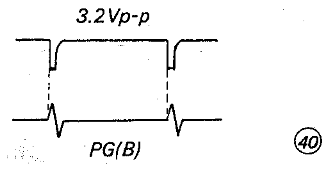
Te
Nc


CHING PULSE
FER Q002,Q003
RF SWITCHING PULSE
IC
CAPSTAN / DRUM SERVO
PWM
UM
EED
TROL
34
L.P.F
R073,C034,R047,C035
IC6 (4/4)
DRUM SPEED/PHASE
12
13
14
DRUM MOTOR STOP Q205
DRUM MOTOR STOP (SYSTEM CONTROL)
DRUM MOTOR DRIVE Q206,Q207,Q210
VOLTAGE LIMITER Q209, Q210
M901
DRUM MOTOR
M
B+
IC6 (2/4)
DRUM PHASE
IC6(4/4)
DRUM PHASE SERVO L.P.F
PWM
37
UM
ASE
TROL
10
9
8
5
6
7
IC4(2/2)
DRUM PHASE SELECT
12
14
13
11
IC6(3/4)
DRUM fH CORRECTION
L.P.F
3
2
1
FF / REN (SYSTEM CONTROL)
B+
RV9
DRUM SHIFT
B+
B+ B+
RV1
CAPSTAN FREE 1
RV3
CAPSTAN FREE 2
RV2
CAPSTAN FREE 3
1
2
4
5
3
βI
βII
βIII
IC4(1/2)
CAPSTAN MOTOR SPEED SELECT
15
10
9
βIII MODE
β1 PB MODE
SYSTEM CONTROL
IC5 (1/3)
CAPSTAN SPEED L.P.F
PWM
24
TAN
ED
ROL
12
13
14
R064
IC5(2/3) CAPSTAN SPEED / PHASE
10
9
8
CAPSTAN MOTOR STOP Q204
CAPSTAN MOTOR STOP
CAPSTAN MOTOR DRIVE Q201~203
M902
CAPSTAN MOTOR
M
IC5(3/3) CAPSTAN PHASE L.P.F
R068
R066
PWM
20
TAN
SE
ROL
3
2
1
RESET
36
RESET (SYSTEM CONTROL)

IC 1 **Digital servo IC**

Terminal No.	I/O	Function and operation	Signal
1	Input	Changing-over signal in the REC mode	H: REC mode
2	Input	Time constant of RF switching pulse position	
3	Input	Composite signal input from the input video signal in the BETASCAN mode. In the BETASCAN mode (42-pin terminal "H") inside IC, the input controls the drum phase output to obtain the BETASCAN.	
4	Input	Input signal in the REC mode	H: REC mode
5	Input	Connected to GND.	
6	Input	Composite signal input from the PB video signal in the picture search mode. In the picture search mode (42-pin terminal "H") inside IC, the input controls the drum phase output to obtain the picture search.	
7	Input	Connected to B + power supply.	
8	Input	Connected to GND.	
9	Input	Connected to GND.	
10		Connected to B + power supply.	
11		Connected to GND.	
12	Output	Not used.	
13	Output	During REC, a composite signal from the input video signal is fed to a 3-pin terminal, and an REC CTL signal is generated and output using the vertical SYNC signal inside IC.	
14	Input	Connected to GND.	
15	Input	Tracking control time constant. During PB inside IC, the tracking control mono-multi output is a reference signal of the capstan phase servo.	
16	Input	PB CTL signal input in the PB mode. During PB, the input is a comparison signal of the capstan phase servo.	
17 18	Input Input	FG signal input from a capstan. During REC, the input is a comparison signal of the capstan phase servo. During REC and PB, the input is a capstan speed servo signal.	
19	Output	Not used.	
20	Output	Capstan phase servo output	PWM wave 5Vp-p
21	Output	Not used.	
22	Output	Not used.	
23	Output	Capstan speed detecting	Goes "H" when a capstan motor starts rotating.

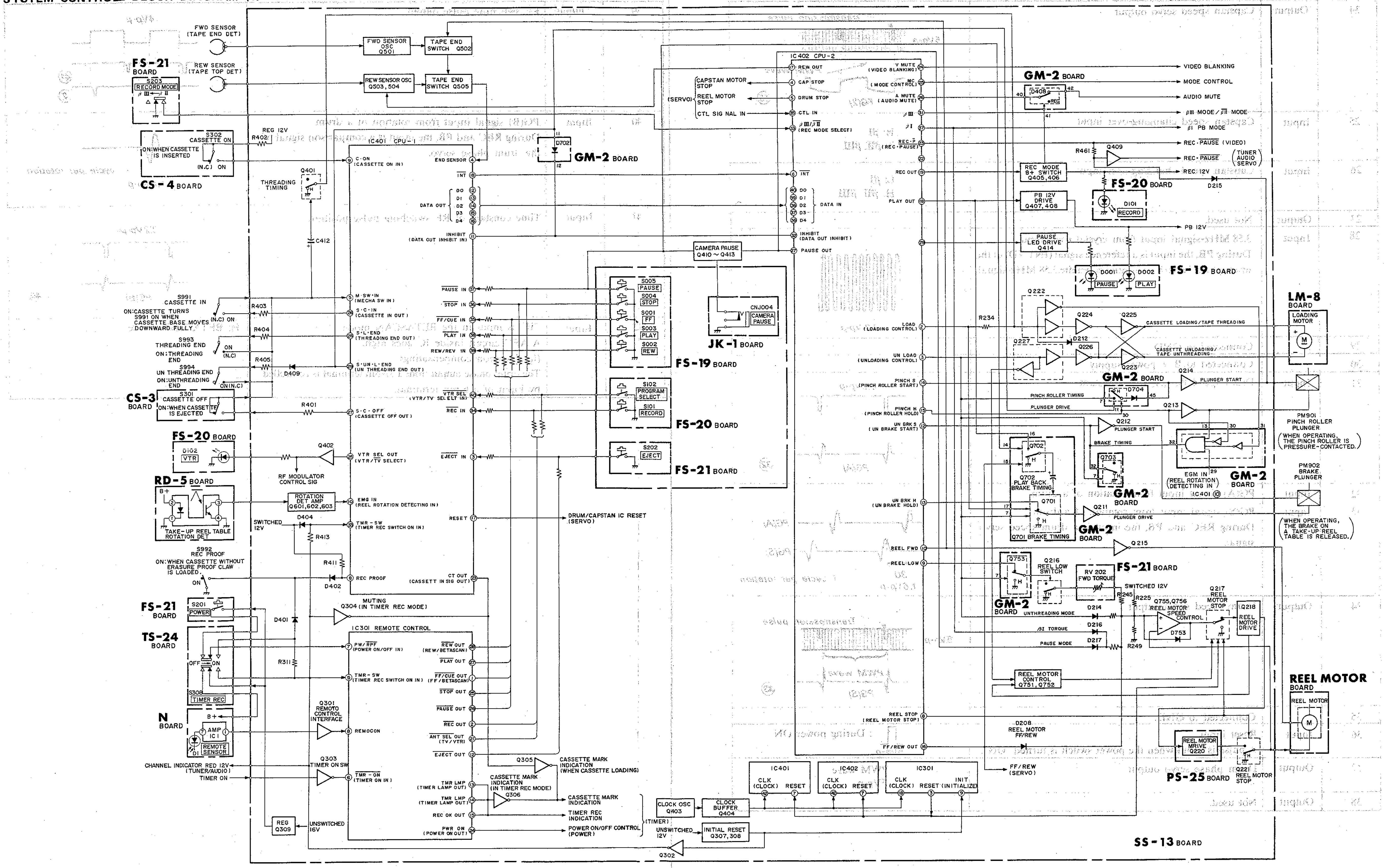
24	Output	Capstan speed servo output	 Transmission pulse 5Vp-p PWM wave FG(2) ⑱
25	Input	Capstan speed changing-over input	H: βI L: βII, βIII
26	Input	Capstan speed changing-over input	L: βI H: βII, βIII
27	Output	Not used.	
28	Input	3.58 MHz-signal input from crystal oscillation. During PB, the input is a reference signal (INT VD) of the drum phase servo by counting down the 3.58 MHz-signal.	
29		Connected to GND	
30		Connected to B + power supply	
31	Input	Drum speed PG (A) time constant	
32 33	Input Input	PG(A) signal input from rotation of a drum PG(S) signal input from rotation of a drum During REC and PB, the input is a drum speed servo signal.	 PG(A) PG(S) 30° 1.6Vp-p 1 cycle per rotation
34	Output	Drum speed servo output	 Transmission pulse 5Vp-p PWM wave PG(S) ㉝
35		Connected to GND.	
36	Input	Reset input A pulse is input when the power switch is turned "ON".	 : During power ON 5Vp-p
37	Output	Drum phase servo output	PWM wave 5Vp-p
38	Output	Not used.	

39	Output	RF switching pulse output	
40	Input	PG(B) signal input from rotation of a drum During REC and PB, the input is a comparison signal of the drum phase servo.	 1 cycle per rotation 1.6Vp-p
41	Input	Time constant of RF switching pulse position	
42	Input	"H" is input in the BETASCAN mode. A AFC circuit inside IC goes high. (f_H deviation compensating) The drum phase output from a 37-pin terminal is controlled by input of a 6-pin terminal.	H: BETASCAN mode

FORMER

FORMER

SYSTEM CONTROL BLOCK DIAGRAM (1)

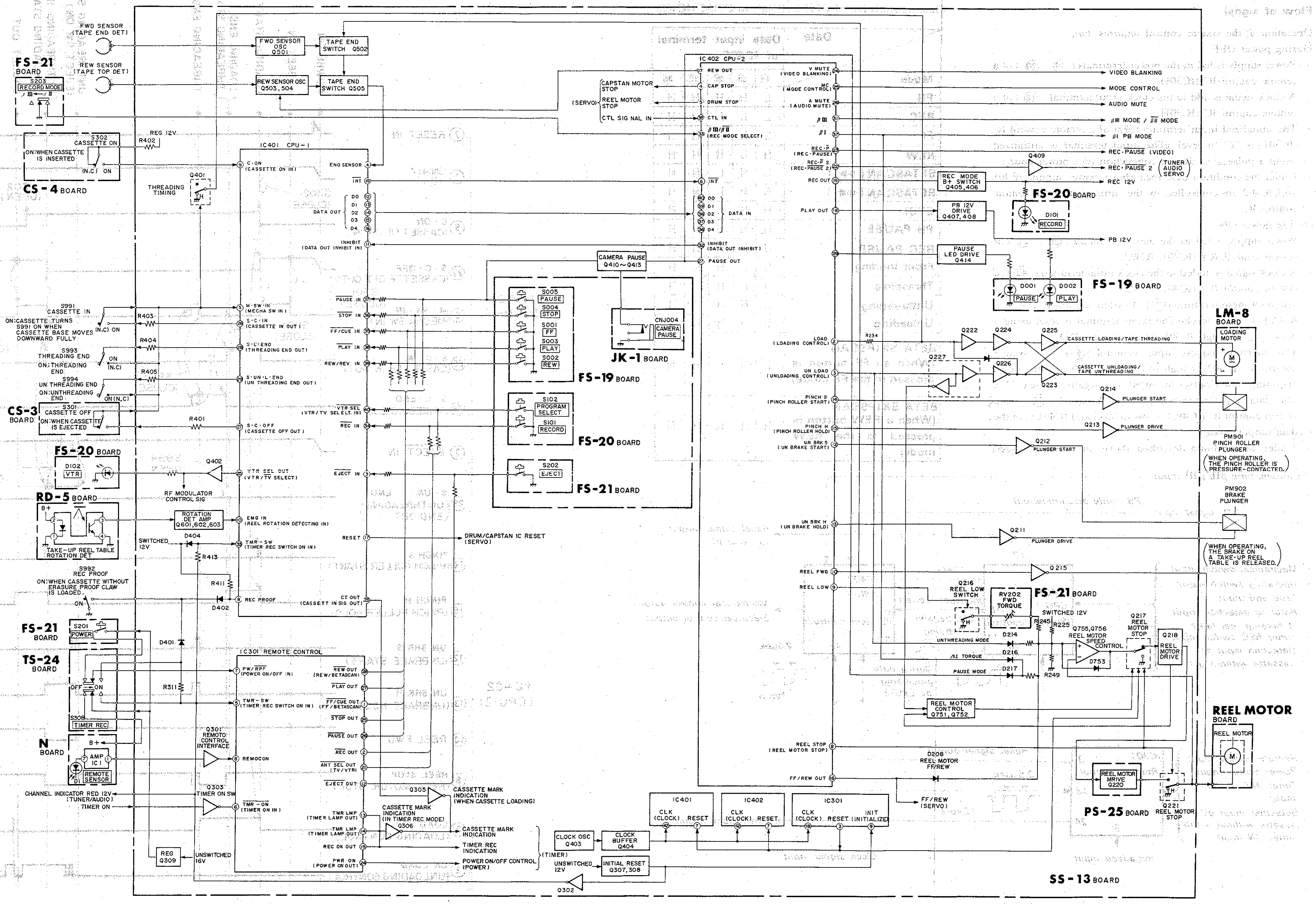


FWD SENSOR (TAPE END DET)
REW SENSOR (TAPE TOP DET)
FS-21 BOARD
S203 RECORD MODE
FWD SENSOR OSC Q501
TAPE END SWITCH Q502
REW SENSOR OSC Q503, 504
TAPE END SWITCH Q505
S302 CASSETTE ON
ON: WHEN CASSETTE IS INSERTED
CS-4 BOARD
REG 12V
R402
IC401 CPU-1
C-ON (CASSETTE ON IN)
END SENSOR
D702
GM-2 BOARD
Q401
THREADING TIMING
INT
DATA OUT
D0
D1
D2
D3
D4
INHIBIT (DATA OUT INHIBIT IN)
C412
S991 CASSETTE IN
ON: CASSETTE TURNS S991 ON WHEN CASSETTE BASE MOVES DOWNWARD FULLY.
S993 THREADING END
ON: THREADING END
S994 UN THREADING END
ON: UNTHREADING END
R403
R404
R405
D409
M-SW-IN (MECHA SW IN)
S-C-IN (CASSETTE IN OUT)
S-L-END (THREADING END OUT)
S-UN-L-END (UN THREADING END OUT)
CS-3 BOARD
S301 CASSETTE OFF
ON: WHEN CASSETTE IS EJECTED
R401
S-C-OFF (CASSETTE OFF OUT)
FS-20 BOARD
D102 VTR
Q402
VTR SEL OUT (VTR/TV SELECT)
RF MODULATOR CONTROL SIG
RD-5 BOARD
TAKE-UP REEL TABLE ROTATION DET
ROTATION DET AMP Q601, 602, 603
EMG IN (REEL ROTATION DETECTING IN)
SWITCHED 12V
D404
R413
TMR-SW (TIMER REC SWITCH ON IN)
RESET
DRUM/CAPSTAN IC RESET (SERVO)
S992 REC PROOF
ON: WHEN CASSETTE WITHOUT ERASURE PROOF CLAW IS LOADED.
R411
D402
REC PROOF
CT OUT (CASSETT IN SIG OUT)
MUTING
Q304 (IN TIMER REC MODE)
FS-21 BOARD
S201 POWER
D401
TS-24 BOARD
R311
S308 TIMER REC
IC301 REMOTE CONTROL
PW/RPF (POWER ON/OFF IN)
TMR-SW (TIMER REC SWITCH ON IN)
REW OUT (REW/BETASCAN)
PLAY OUT
FF/CUE OUT (FF/BETASCAN)
STOP OUT
PAUSE OUT
REC OUT
ANT SEL OUT (TV/VTR)
EJECT OUT
N BOARD
AMP IC1
D1
REMOTE SENSOR
Q301 REMOTO CONTROL INTERFACE
REMOCON
CHANNEL INDICATOR RED 12V (TUNER/AUDIO)
TIMER ON
Q303 TIMER ON SW
TMR-ON (TIMER ON IN)
TMR LMP (TIMER LAMP OUT)
REC OK OUT
PWR ON (POWER ON OUT)
Q305
CASSETTE MARK INDICATION (WHEN CASSETTE LOADING)
CASSETTE MARK INDICATION (IN TIMER REC MODE)
Q306
CASSETTE MARK INDICATION
TIMER REC INDICATION
POWER ON/OFF CONTROL (POWER)
(TIMER)
REG Q309
UNSWITCHED 16V
PAUSE IN
STOP IN
FF/CUE IN
PLAY IN
REW/REV IN
VTR SEL (VTR/TV SELECT IN)
REC IN
EJECT IN
S005 PAUSE
S004 STOP
S001 FF
S003 PLAY
S002 REW
FS-19 BOARD
S102 PROGRAM SELECT
S101 RECORD
FS-20 BOARD
S202 EJECT
FS-21 BOARD
CAMERA PAUSE Q410 ~ Q413
CNJ004 CAMERA PAUSE
JK-1 BOARD
IC402 CPU-2
REW OUT
CAP STOP
DRUM STOP
CTL IN
βIII/βII (REC MODE SELECT)
(SERVO)
CAPSTAN MOTOR STOP
REEL MOTOR STOP
CTL SIG NAL IN
V MUTE (VIDEO BLANKING)
MC (MODE CONTROL)
A MUTE (AUDIO MUTE)
βIII
βI
REC-P (REC-PAUSE)
REC OUT
PLAY OUT
DATA IN
INHIBIT (DATA OUT INHIBIT)
PAUSE OUT
GM-2 BOARD
D408
VIDEO BLANKING
MODE CONTROL
AUDIO MUTE
βIII MODE / βII MODE
βI PB MODE
REC-PAUSE (VIDEO)
REC-PAUSE
REC 12V
TUNER AUDIO SERVO
R461
Q409
REC MODE B+ SWITCH Q405, 406
FS-20 BOARD
D215
PB 12V DRIVE Q407, 408
D101 RECORD
PB 12V
PAUSE LED DRIVE Q414
D001 PAUSE
D002 PLAY
FS-19 BOARD
Q222
R234
LOAD (LOADING CONTROL)
Q224
Q225
CASSETTE LOADING/TAPE THREADING
Q227
D212
Q226
CASSETTE UNLOADING/TAPE UNTHREADING
UN LOAD (UNLOADING CONTROL)
Q223
LM-8 BOARD
LOADING MOTOR
GM-2 BOARD
Q214
PLUNGER START
PINCH S (PINCH ROLLER START)
PINCH ROLLER TIMING
D704
PLUNGER DRIVE
Q213
PINCH H (PINCH ROLLER HOLD)
UN BRK S (UN BRAKE START)
Q212
PLUNGER START
BRAKE TIMING
PM901 PINCH ROLLER PLUNGER
(WHEN OPERATING, THE PINCH ROLLER IS PRESSURE-CONTACTED.)
Q702
Q702 PLAY BACK BRAKE TIMING
Q703
EGM IN (REEL ROTATION DETECTING IN)
IC401
GM-2 BOARD
PM902 BRAKE PLUNGER
UN BRK H (UN BRAKE HOLD)
Q701
Q211
PLUNGER DRIVE
Q701 BRAKE TIMING
GM-2 BOARD
(WHEN OPERATING, THE BRAKE ON A TAKE-UP REEL TABLE IS RELEASED.)
REEL FWD
REEL LOW
Q215
Q753
Q216 REEL LOW SWITCH
RV 202 FWD TORQUE
FS-21 BOARD
SWITCHED 12V
R245
R225
Q755, Q756 REEL MOTOR SPEED CONTROL
Q217 REEL MOTOR STOP
Q218 REEL MOTOR DRIVE
D753
GM-2 BOARD
UNTHREADING MODE
D214
βI TORQUE
D216
PAUSE MODE
D217
R249
REEL MOTOR CONTROL Q751, Q752
REEL MOTOR BOARD
REEL MOTOR
REEL STOP (REEL MOTOR STOP)
D208 REEL MOTOR FF/REW
FF/REW OUT
FF/REW (SERVO)
REEL MOTOR MRIVE Q220
Q221 REEL MOTOR STOP
PS-25 BOARD
IC401 CLK (CLOCK) RESET
IC402 CLK (CLOCK) RESET
IC301 CLK (CLOCK) RESET INIT (INITIALIZE)
CLOCK OSC Q403
CLOCK BUFFER Q404
UNSWITCHED 12V
INITIAL RESET Q307, 308
Q302
SS-13 BOARD

NEW

NEW

SYSTEM CONTROL BLOCK DIAGRAM (1)


FS-21 BOARD
S203 RECORD MODE
FWD SENSOR (TAPE END DET)
REW SENSOR (TAPE TOP DET)
FWD SENSOR OSC Q501
REW SENSOR OSC Q503,504
TAPE END SWITCH Q502
TAPE END SWITCH Q505
CS-4 BOARD
S302 CASSETTE ON
ON: WHEN CASSETTE IS INSERTED
REG 12V
R402
IC401 CPU-1
C-ON (CASSETTE ON IN)
END SENSOR
INT
D0 D1 D2 D3 D4 DATA OUT
INHIBIT (DATA OUT INHIBIT IN)
Q401 THREADING TIMING
S991 CASSETTE IN
ON: CASSETTE TURNS S991 ON WHEN CASSETTE BASE MOVES DOWNWARD FULLY
S993 THREADING END
ON: THREADING END
S994 UN THREADING END
ON: UNTHREADING END
CS-3 BOARD
S301 CASSETTE OFF
ON: WHEN CASSETTE IS EJECTED
R403 R404 R405 R401
M-SW-IN (MECHA SW IN)
S-C-IN (CASSETTE IN OUT)
S-L-END (THREADING END OUT)
S-UN-L-END (UN THREADING END OUT)
S-C-OFF (CASSETTE OFF OUT)
PAUSE IN
STOP IN
FF/CUE IN
PLAY IN
REW/REV IN
VTR SEL (VTR/TV SEL ELT IN)
REC IN
EJECT IN
FS-20 BOARD
D102 VTR
Q402
VTR SEL OUT (VTR/TV SELECT)
RF MODULATOR CONTROL SIG
RD-5 BOARD
TAKE-UP REEL TABLE ROTATION DET
ROTATION DET AMP Q601,602,603
EMG IN (REEL ROTATION DETECTING IN)
SWITCHED 12V
D404
R413
TMR-SW (TIMER REC SWITCH ON IN)
RESET
DRUM/CAPSTAN IC RESET (SERVO)
S992 REC PROOF
ON: WHEN CASSETTE WITHOUT ERASURE PROOF CLAW IS LOADED
R411
D402
REC PROOF
CT OUT (CASSETT IN SIG OUT)
FS-21 BOARD
S201 POWER
D401
TS-24 BOARD
R311
OFF ON
S308 TIMER REC
N BOARD
AMP IC1
D1 REMOTE SENSOR
IC301 REMOTE CONTROL
PW/RPF (POWER ON/OFF IN)
TMR-SW (TIMER REC SWITCH ON IN)
Q301 REMOTO CONTROL INTERFACE
REMOCON
Q303 TIMER ON SW
TMR-ON (TIMER ON IN)
CHANNEL INDICATOR RED 12V (TUNER/AUDIO)
TIMER ON
REG Q309
UNSWITCHED 16V
REW OUT (REW/BETASCAN)
PLAY OUT
FF/CUE OUT (FF/BETASCAN)
STOP OUT
PAUSE OUT
REC OUT
ANT SEL OUT (TV/VTR)
EJECT OUT
TMR LMP (TIMER LAMP OUT)
REC OK OUT
PWR ON (POWER ON OUT)
Q305 CASSETTE MARK INDICATION (WHEN CASSETTE LOADING)
Q306 CASSETTE MARK INDICATION (IN TIMER REC MODE)
CASSETTE MARK INDICATION
TIMER REC INDICATION
POWER ON/OFF CONTROL (POWER)
(TIMER)
Q302
S005 PAUSE
S004 STOP
S001 FF
S003 PLAY
S002 REW
FS-19 BOARD
CNJ004 CAMERA PAUSE
JK-1 BOARD
S102 PROGRAM SELECT
S101 RECORD
FS-20 BOARD
S202 EJECT
FS-21 BOARD
CAMERA PAUSE Q410~Q413
IC402 CPU-2
REW OUT
CAP STOP
DRUM STOP
CTL IN
βIII/βII (REC MODE SELECT)
(SERVO)
CAPSTAN MOTOR STOP
REEL MOTOR STOP
CTL SIG NAL IN
D0 D1 D2 D3 D4 DATA IN
INHIBIT (DATA OUT INHIBIT)
PAUSE OUT
V MUTE (VIDEO BLANKING)
MC (MODE CONTROL)
A MUTE (AUDIO MUTE)
βIII
βI
REC-P (REC-PAUSE)
REC-P 2 (REC-PAUSE 2)
REC OUT
PLAY OUT
VIDEO BLANKING
MODE CONTROL
AUDIO MUTE
βIII MODE / βII MODE
βI PB MODE
REC-PAUSE (VIDEO)
Q409
REC-PAUSE 2 (TUNER AUDIO SERVO)
REC 12V
REC MODE B+ SWITCH Q405,406
FS-20 BOARD
D101 RECORD
PB 12V DRIVE Q407,408
PB 12V
PAUSE LED DRIVE Q414
D001 PAUSE
D002 PLAY
FS-19 BOARD
LM-8 BOARD
LOADING MOTOR
LOAD (LOADING CONTROL)
R234
Q222 Q224 Q225
Q227 Q226 Q223
CASSETTE LOADING/TAPE THREADING
CASSETTE UNLOADING/TAPE UNTHREADING
UN LOAD (UNLOADING CONTROL)
PINCH S (PINCH ROLLER START)
Q214 PLUNGER START
PINCH H (PINCH ROLLER HOLD)
Q213 PLUNGER DRIVE
PM901 PINCH ROLLER PLUNGER
(WHEN OPERATING, THE PINCH ROLLER IS PRESSURE-CONTACTED.)
UN BRK S (UN BRAKE START)
Q212 PLUNGER START
PM902 BRAKE PLUNGER
UN BRK H (UN BRAKE HOLD)
Q211 PLUNGER DRIVE
(WHEN OPERATING, THE BRAKE ON A TAKE-UP REEL TABLE IS RELEASED.)
REEL FWD
REEL LOW
Q215
Q216 REEL LOW SWITCH
RV202 FWD TORQUE
FS-21 BOARD
SWITCHED 12V
R245 R225
Q755,Q756 REEL MOTOR SPEED CONTROL
Q217 REEL MOTOR STOP
Q218 REEL MOTOR DRIVE
UNTHREADING MODE
D214
βI TORQUE
D216
PAUSE MODE
D217
R249
D753
REEL MOTOR CONTROL Q751,Q752
REEL MOTOR BOARD
REEL MOTOR
REEL STOP (REEL MOTOR STOP)
D208 REEL MOTOR FF/REW
FF/REW OUT
FF/REW (SERVO)
REEL MOTOR DRIVE Q220
PS-25 BOARD
Q221 REEL MOTOR STOP
IC401 CLK (CLOCK) RESET
IC402 CLK (CLOCK) RESET
IC301 CLK (CLOCK) RESET INIT (INITIALIZE)
CLOCK OSC Q403
CLOCK BUFFER Q404
UNSWITCHED 12V
INITIAL RESET Q307,308
SS-13 BOARD

SYSTEM CONTROL BLOCK DIAGRAM (2)

Flow of signal

Operation of the system control requires that.

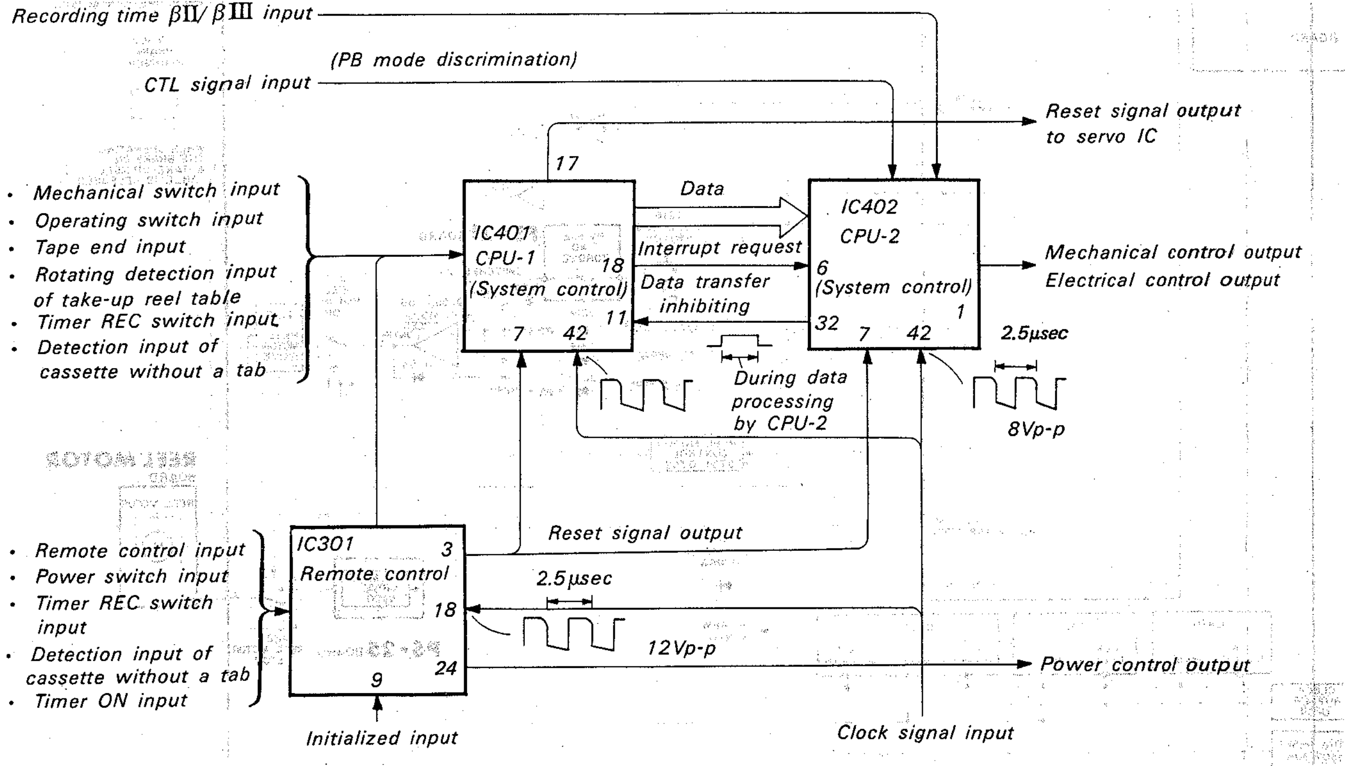
During power OFF

- Power supply is fed to the power terminals (⑲ . ⑳) of a remote control IC (IC301).
- A clock signal is add to the clock input terminal (⑱) of a remote control IC (IC301).
- The initialized input terminal (⑨) of a remote control IC (IC301) is "L" in level. (The input terminal is initialized using a pulse _/‾L_ during connection of a power code.)
- Under the condition described above, power supply, IC401 and IC402 are controlled by the input signal of a remote control IC.

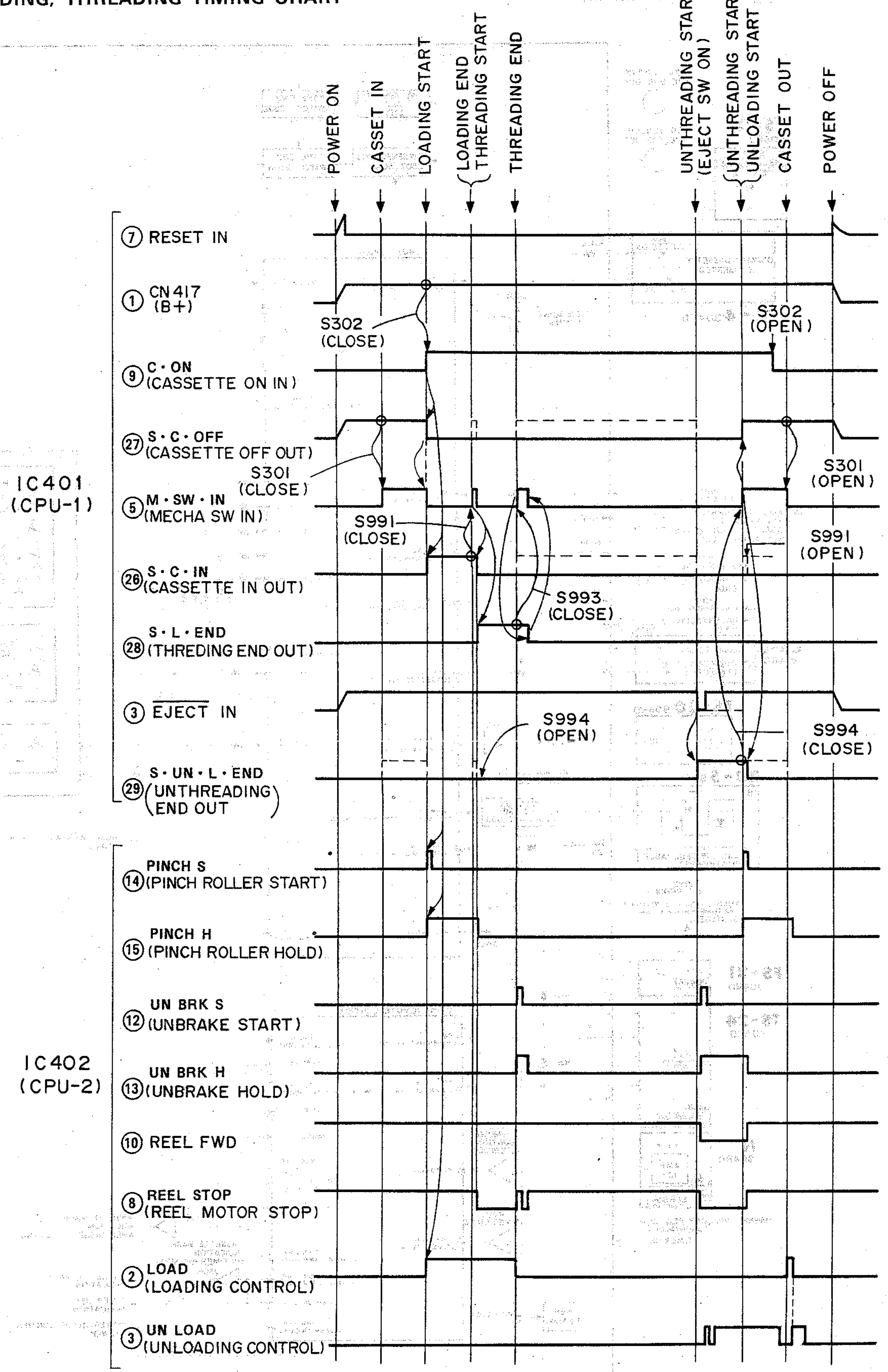
During power ON

- Power supply is fed to the power terminals (⑳ . ㉑) of system control ICs (IC401. IC402).
- A clock signal is added to the clock input terminal (㊷) of system control ICs (IC401. IC402).
- The reset input terminal (⑦) of system control ICs (IC401. IC402) is "L" in level. (The input terminal is reset using a pulse _|‾L_ through IC301 during power ON.)
- The interrupt request input terminal (⑥) of a system control IC (IC402) is high in level and each pressing of an operating switch causes the input of a negative pulse (⊤).
- The data transfer inhibiting output terminal (㉜) of a system control IC (IC402) is low in level and IC401 is in the data output mode.
- Under the condition described above, an interrupt request pulse and data are fed from IC401 to IC402 according to each input, and then each control output is fed from IC402.
- Data transmission of CPU-1 (IC401) to CPU-2 (IC402)

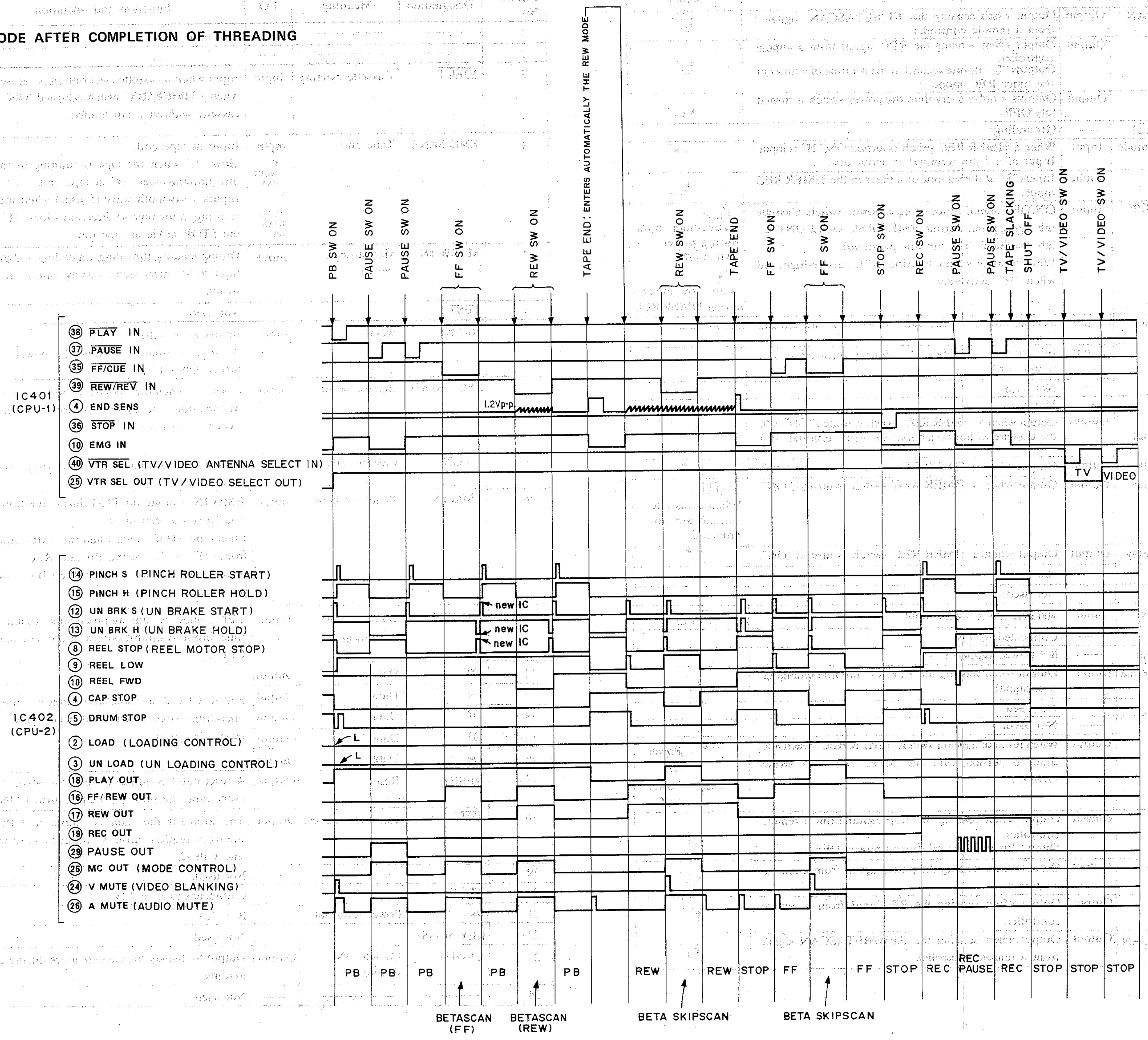
Data / Mode	Data input terminal of IC402				
	㊵	㊴	㊳	㊲	㊱
PB	L	H	H	H	H
REC	L	L	L	H	H
FF	L	L	H	H	H
REW	H	L	H	H	H
BETASCAN (▶▶)	L	H	L	H	H
BETASCAN (◀◀)	H	H	L	H	H
STOP	H	H	L	L	H
PB PAUSE	H	H	H	H	H
REC PAUSE	H	L	L	H	H
Front loading	L	L	H	L	H
Threading	H	L	H	L	H
Unthreading	H	H	H	L	H
Unloading	L	H	H	L	H
BETA SKIPSCAN (When an FF button is pressed in the FF mode)	L	H	L	H	H
BETA SKIPSCAN (When a REW button is pressed in the REW mode)	H	H	L	H	H


Recording time βII/βIII input
(PB mode discrimination)
CTL signal input
Reset signal output to servo IC
Mechanical switch input
Operating switch input
Tape end input
Rotating detection input of take-up reel table
Timer REC switch input
Detection input of cassette without a tab
17
Data
IC401 CPU-1 (System control)
18
11
7
42
Interrupt request
Data transfer inhibiting
IC402 CPU-2 (System control)
6
32
7
42
1
Mechanical control output
Electrical control output
2.5μsec
During data processing by CPU-2
8Vp-p
Remote control input
Power switch input
Timer REC switch input
Detection input of cassette without a tab
Timer ON input
IC301 Remote control
3
18
24
9
Reset signal output
2.5μsec
12Vp-p
Power control output
Initialized input
Clock signal input

LOADING, THREADING TIMING CHART



TIMING CHART IN EACH MODE AFTER COMPLETION OF THREADING


PB SW ON
PAUSE SW ON
PAUSE SW ON
FF SW ON
REW SW ON
TAPE END; ENTERS AUTOMATICALLY THE REW MODE
REW SW ON
TAPE END
FF SW ON
FF SW ON
STOP SW ON
REC SW ON
PAUSE SW ON
PAUSE SW ON
TAPE SLACKING
SHUT OFF
TV/VIDEO SW ON
TV/VIDEO SW ON
IC401 (CPU-1)
㊳ PLAY IN
㊲ PAUSE IN
㉟ FF/CUE IN
㊴ REW/REV IN
④ END SENS
㊱ STOP IN
⑩ EMG IN
㊵ VTR SEL (TV/VIDEO ANTENNA SELECT IN)
㉕ VTR SEL OUT (TV/VIDEO SELECT OUT)
1.2Vp-p
TV
VIDEO
IC402 (CPU-2)
⑭ PINCH S (PINCH ROLLER START)
⑮ PINCH H (PINCH ROLLER HOLD)
⑫ UN BRK S (UN BRAKE START)
⑬ UN BRK H (UN BRAKE HOLD)
⑧ REEL STOP (REEL MOTOR STOP)
⑨ REEL LOW
⑩ REEL FWD
④ CAP STOP
⑤ DRUM STOP
② LOAD (LOADING CONTROL)
③ UN LOAD (UN LOADING CONTROL)
⑱ PLAY OUT
⑯ FF/REW OUT
⑰ REW OUT
⑲ REC OUT
㉙ PAUSE OUT
㉕ MC OUT (MODE CONTROL)
㉔ V MUTE (VIDEO BLANKING)
㉖ A MUTE (AUDIO MUTE)
new IC
new IC
new IC
L
L
PB
PB
PB
PB
PB
REW
REW
STOP
FF
FF
STOP
REC
REC PAUSE
REC
STOP
STOP
STOP
BETASCAN (FF)
BETASCAN (REW)
BETA SKIPSCAN
BETA SKIPSCAN

· Input/output terminal of remote control IC (IC301)

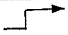
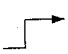
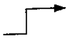
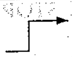
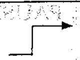
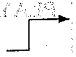
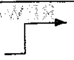
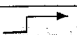
Terminal No.	Designation	Meaning	I/O	Function and operation	Signal
1	$\overline{\text{FF/CUE}}$	FF/BETASCAN mode	Output	Output when sensing the FF/BETASCAN signal from a remote controller.	‾⊔‾
2	$\overline{\text{REC}}$	REC mode	Output	Output when sensing the REC signal from a remote controller. Outputs "L" for one second at the set time of a timer in the timer REC mode.	‾⊔‾
3	RESET	Reset	Output	Outputs a pulse every time the power switch is turned ON/OFF.	_⊓_
4	Vdd	Power terminal	——	Grounding	
5	TMR-SW	Timer REC mode	Input	When a TIMER REC switch is turned ON, "H" is input. Input of a 7-pin terminal is active-low.	_|‾→
6	$\overline{\text{TMR-ON}}$	Timer ON	Input	Inputs "L" at the set time of a timer in the TIMER REC mode.	‾|_
7	PWR/$\overline{\text{RPF}}$	Power ON/OFF	Input	ON/OFF signal input using a power switch. Cassette tab signal input during TIMER REC switch ON ("L": tab provided, "H": tab not provided). When input of a 5-pin terminal is "L", active-high, and when "H", active-low.	_⊓_ : Active-high input during power switch ON. ‾|_ : Active-low input during TIMER REC.
8	REMOCON	Remote control	Input	Remote control serial data input from the sensing block	Serial data
9	INIT	Initializing	Input	Initializes the inside of IC during connection of a power cord.	_/‾_
10	N · C	————	——	Not used.	
11	————	————	——	Not used.	
12	$\overline{\text{EJECT}}$	Unloading of cassette without a tab	Output	Output when a TIMER REC switch is turned "ON" with the cassette without a tab loaded (7-pin terminal "H").	‾|_
13	TMR-LMP	Cassette display	Output	Output when a TIMER REC switch is turned "ON".	_|‾→
14	TMR-LMP	Cassette display	Output	Output when a TIMER REC switch is turned "ON".	_⊓⊓⊓ : When a cassette and tab are not provided
15	REC OK	REC OK display	Output	Output when a TIMER REC switch is turned "ON".	_|‾→
16	————	————	——	Not used.	
17	————	————	——	Not used.	
18	CLK IN	External clock	Input	400 kHz-clock signal input	_⊓⊓⊓
19	————	————	——	Connected to Vss.	
20	Vss	Power terminal	——	B + power supply 12V	
21	$\overline{\text{ANT SEL}}$	Video/TV antenna selecting	Output	Output when sensing the VTR/TV antenna changing-over signal.	‾⊔‾
22	————	————	——	Not used.	
23	————	————	——	Not used.	
24	PWR ON	Power ON	Output	When input of a power switch, TIMER REC switch and timer is turned ON, the power output is turned ON/OFF.	_|‾→ : Power ON ‾|_→ : Power OFF
25	$\overline{\text{STOP}}$	STOP mode	Output	Output when sensing the stop signal from a remote controller. Output for one second during power OFF.	‾⊔‾
26	$\overline{\text{PAUSE}}$	PAUSE mode	Output	Output when sensing the pause signal from a remote controller.	‾⊔‾
27	$\overline{\text{PLAY}}$	PB mode	Output	Output when sensing the PB signal from a remote controller.	‾⊔‾
28	$\overline{\text{REW/REV}}$	REW/BETASCAN mode	Output	Output when sensing the REW/BETASCAN signal from a remote controller.	‾⊔‾

· Input/output terminal of system control IC (IC401)

Terminal No.	Designation	Meaning	I/O	Function and operation	Signal
1	————	————	——	Not used.	
2	————	————	——		
3	$\overline{\text{EJECT}}$	Cassette ejecting	Input	Input when a cassette eject button is pressed. Input when a TIMER REC switch is turned "ON" with the cassette without a tab loaded.	‾⊔‾
4	END SENS	Tape end	Input "H" =MORE THAN 8.5V "L" =LESS THAN 4.0V	Input at tape end. Goes "L" when the tape is running in the FWD directionand goes "H" at tape end. Inputs a sawtooth wave (5 μsec) when the tape is running in the reverse direction. Goes "H" to enter the STOP mode at tape top.	_|‾ : Tape end /|/|/|‾|_ : Tape top 5μsec 1.2Vp-p
5	M · SW IN	Mechanical switch	Input	During loading, threading, unloading and unthreading, CPU-1 enters each mode by using a mechanical switch.	_|‾ ‾|_
6	TEST			Not used.	
7	RESET	Reset	Input	Inputs to initialize CPU-1. A pulse is input every time the power switch is turned ON/OFF.	_⊓_
8	REC PROOF	Record proof	Input	Goes "H" when the cassette without a tab is loaded. At that time, the cassette is ejected when a REC switch is turned ON.	H: cassette without a tab L: cassette with a tab
9	C · ON	Cassette ON	Input	Cassette ON is input to CPU-1 during insertion of a cassette.	_|‾
10	EMG IN	T-reel rotation	Input	EMG IN is input to CPU-1 during rotation of a T-reel (take-up reel) table. Enters the STOP mode when the EMG input goes from "H" to "L" during PB and REC. At that time, no switch except the EJECT switch is put to use.	H: when rotating L: when not rotating
11	INHIBIT	Data output inhibiting	Input	CPU-2 goes "H" during processing of data. At that time, input to inhibit output of the new data from CPU-1.	H: new data output inhibiting
12	D0	Data	Output	Fed to CPU-2, as data, according to input of an operating switch, mechanical switch, tape end, and defect detection.	Parallel data
13	D1	Data	Output		
14	D2	Data	Output		
15	D3	Data	Output		
16	D4	Data	Output		
17	$\overline{\text{RESET}}$	Reset	Output	A reset pulse is output to reset the servo IC (IC1) every time the power switch is turned ON.	_⊓_
18	$\overline{\text{INT}}$	Interrupt request	Output	The moment the data is output to CPU-2, an interrupt request pulse is output to store the data into CPU-2.	‾⊔‾
19	————	————	——	Not used.	
20	TEST			Connected to B + 12V.	
21	Vss	Power terminal		B + 12V	
22	KEY SENSE			Not used.	
23	CI-OUT	Cassette IN display	Output	Output to display the cassette mark during cassette loading.	H: during cassette loading
24	————	————	——	Not used.	

25	VTR SEL OUT	TV/video selecting	Output	Output to change-over the antenna of an RF modulator to TV side or video side. "H" is automatically output in the PB mode. Output is inverted every time a TV/VTR switch or commander switch is pressed.	H: VTR side L: TV side
26	S・C・IN	Output for Cassette IN reading	Output	Output to inform CPU-1 that loading is completed. When loading is completed, a cassette IN switch (S991) is pressed by the cassette to store into a 5-pin terminal.	_⌐→
27	S・C・OFF	Output for Cassette OFF reading	Output	Output to inform CPU-1 that unloading is completed and the cassette is unthreaded. During unthreading, a cassette OFF switch (S301) is turned ON by the cam to store into a 5-pin terminal.	_⌐→
28	S・L・END	Output for threading end reading	Output	Output to inform CPU-1 that threading is completed. During end of threading, a threading end switch (S993) is turned ON to store into a 5-pin terminal.	_⌐→
29	S・UN・L・END	Output for unthreading end reading	Output	Output to inform CPU-1 that unthreading is completed. During end of unthreading, an unthreading end switch (S994) is turned ON to store into a 5-pin terminal.	_⌐→
30	———	———	——	Not used.	
31	———	———	——	Not used.	
32	———	———	——	Not used.	
33	TMR・SW	TIMER REC mode	Input	Goes "H" when a TIMER REC switch is turned ON. Input to inform CPU-1 that the unit is in the TIMER REC mode.	L: when not in the TIMER REC mode H: when in the TIMER REC mode
34	$\overline{\text{REC}}$	REC mode	Input	Input when pressing a REC switch and sensing the REC signal from a remote controller.	‾|_|‾
35	$\overline{\text{FF/CUE}}$	FF/BETASCAN mode	Input	Input when pressing a FF/BETASCAN switch and sensing the FF/BETASCAN signal from a remote controller.	‾|_|‾
36	$\overline{\text{STOP}}$	STOP mode	Input	Input when pressing a stop switch and sensing the stop signal from a remote controller.	‾|_|‾
37	$\overline{\text{PAUSE}}$	PAUSE mode	Input	Input when pressing a pause switch and sensing the pause signal from a remote controller.	‾|_|‾
38	$\overline{\text{PLAY}}$	PB mode	Input	Input when pressing a PB switch and sensing the PB signal from a remote controller.	‾|_|‾
39	$\overline{\text{REW/REV}}$	REW/BETASCAN mode	Input	Input when pressing REW/BETASCAN switch and sensing the REW/BETASCAN signal from a remote controller.	‾|_|‾
40	$\overline{\text{VTR SEL}}$	VTR/TV antenna selecting	Input	Input when pressing a VTR/TV switch and sensing the VTR/TV signal from a remote controller.	‾|_|‾
41	Vcc	Power terminal		Grounding side	
42	CLK	Clock	Input	External clock signal input	⎍⎍⎍⎍ *400kHz*

- **Input/output terminal of system control IC (IC402)**

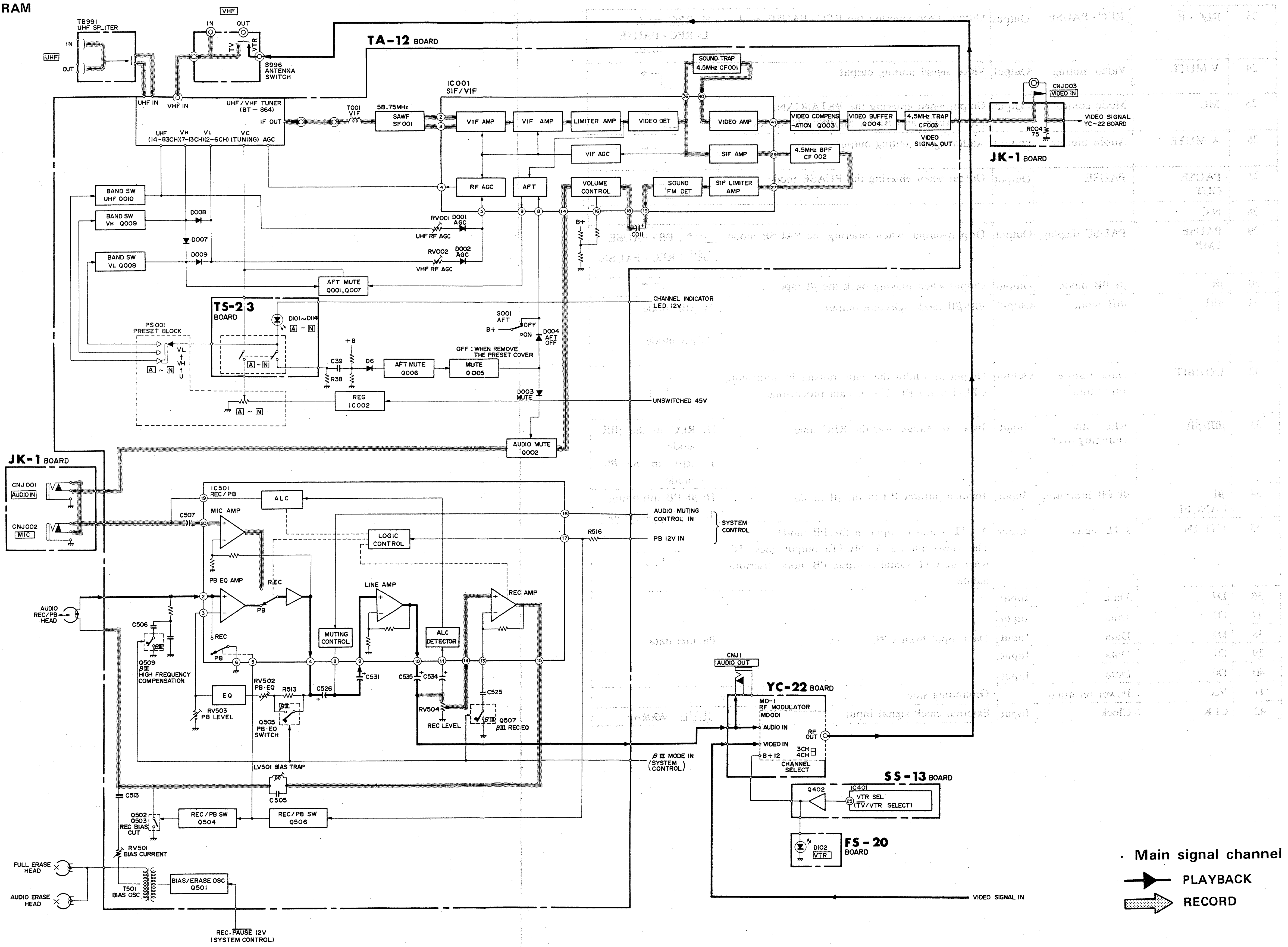
Terminal No.	Designation	Meaning	I/O	Function and operation	Signal
1	———	———	——	Not used.	
2	LOAD	Loading	Output	Output to perform loading and threading.	
3	UN LOAD	Unloading	Output	Output to perform unloading and unthreading.	
4	CAP STOP	Capstan motor stop	Output	Output to stop the capstan motor.	
5	DRUM STOP	Drum motor stop	Output	Output to stop the drum motor.	
6	$\overline{\text{INT}}$	Interrupt request	Input	An interrupt request pulse is input the moment the data is fed from CPU-1. The data from CPU-1 is stored into CPU-2.	
7	RESET	Reset	Input	Input to initialize CPU-2. A pulse is input every time the power switch is turned ON/OFF.	
8	REEL STOP	Reel motor stop	Output	Output to stop the reel motor.	
9	REEL LOW	Reel Low	Output	Output to speed down the reel motor.	
10	REEL FWD	Reel rotation in the FWD direction	Output	Output to change over the rotational direction of a reel.	H: FWD direction L: Reverse direction
11	———	———	——	Not used.	
12	UN BRK S	Brake canceling and plunger starting	Output	Output to start the plunger to release the brake of a take-up reel.	
13	UN BRK H	Brake canceling and plunger holding	Output	Output to hold the brake plunger.	
14	PINCH S	Pinch roller plunger starting	Output	During loading (unloading) and threading (unthreading), changes over the drive of a loading motor. Output to start the plunger to pressure-contact a pinch roller.	
15	PINCH H	Pinch roller plunger	Output	Output to hold the pinch roller plunger.	
16	FF/REW OUT	FF/REW mode	Output	Output when entering the FF, REW, BETASCAN, and BETA SKIPSCAN modes.	
17	REW OUT	REW mode	Output	Output when entering the REW and BETASCAN (REW) modes.	
18	PLAY OUT	PB mode	Output	Output when entering the PB, BETASCAN, BETA SKIPSCAN and PB PAUSE modes.	
19	REC OUT	REC mode	Output	Output when entering the REC and REC PAUSE modes.	
20	TEST			Connected to B + 12V.	
21	Vss	Power terminal		B + 12V	
22	——— REC • P 2	——— REC • PAUSE 2	—— Output	Not used.... FORMER Output when entering the REC • PAUSE mode.... NEW	——— H: REC mode L: REC • PAUSE mode

23	REC・$\overline{P}$	REC・PAUSE	Output	Output when entering the REC・PAUSE mode.	H: REC mode L: REC・PAUSE mode
24	V MUTE	Video muting	Output	Video signal muting output	_⌐→
25	MC	Mode control	Output	Output when entering the BETASCAN, PB・PAUSE and BETA SKIPSCAN modes.	_⌐→
26	A MUTE	Audio muting	Output	Audio signal muting output	_⌐→
27	PAUSE OUT	PAUSE	Output	Output when entering the PUASE mode.	_⌐→
28	N.C				
29	PAUSE LMP	PAUSE display	Output	Display-output when entering the PAUSE mode.	_⌐→: PB・PAUSE ⎍⎍⎍ : REC・PAUSE
30	βI	βI PB mode	Output	Output when playing back the βI tape.	_⌐→
31	βIII	βIII mode	Output	βIII/βII mode selecting output	H: βIII mode L: βII mode
32	INHIBIT	Data transfer inhibiting	Output	Output to inhibit the data transfer by informing CPU-1 that CPU-2 is in data processing.	_⎍_
33	βIII/$\overline{βII}$	REC time changing-over	Input	Input to change over the REC time	H: REC in the βIII mode L. REC in the βII mode
34	βI CANCEL	βI PB inhibiting	Input	Input to inhibit PB in the βI mode.	H: βI PB inhibiting L: Inhibit canceling
35	CTL IN	CTL signal	Input	A CTL signal is input in the PB mode. The video muting (V MUTE) output goes "H" when no CTL signal is input. PB mode discrimination.	_⎍_⎍
36	D4	Data	Input	Data input from CPU-1	Parallel data
37	D3	Data	Input		
38	D2	Data	Input		
39	D1	Data	Input		
40	D0	Data	Input		
41	Vcc	Power terminal		Grounding side	
42	CLK	Clock	Input	External clock signal input	⎍⎍⎍ 400kHz

FORMER

FORMER

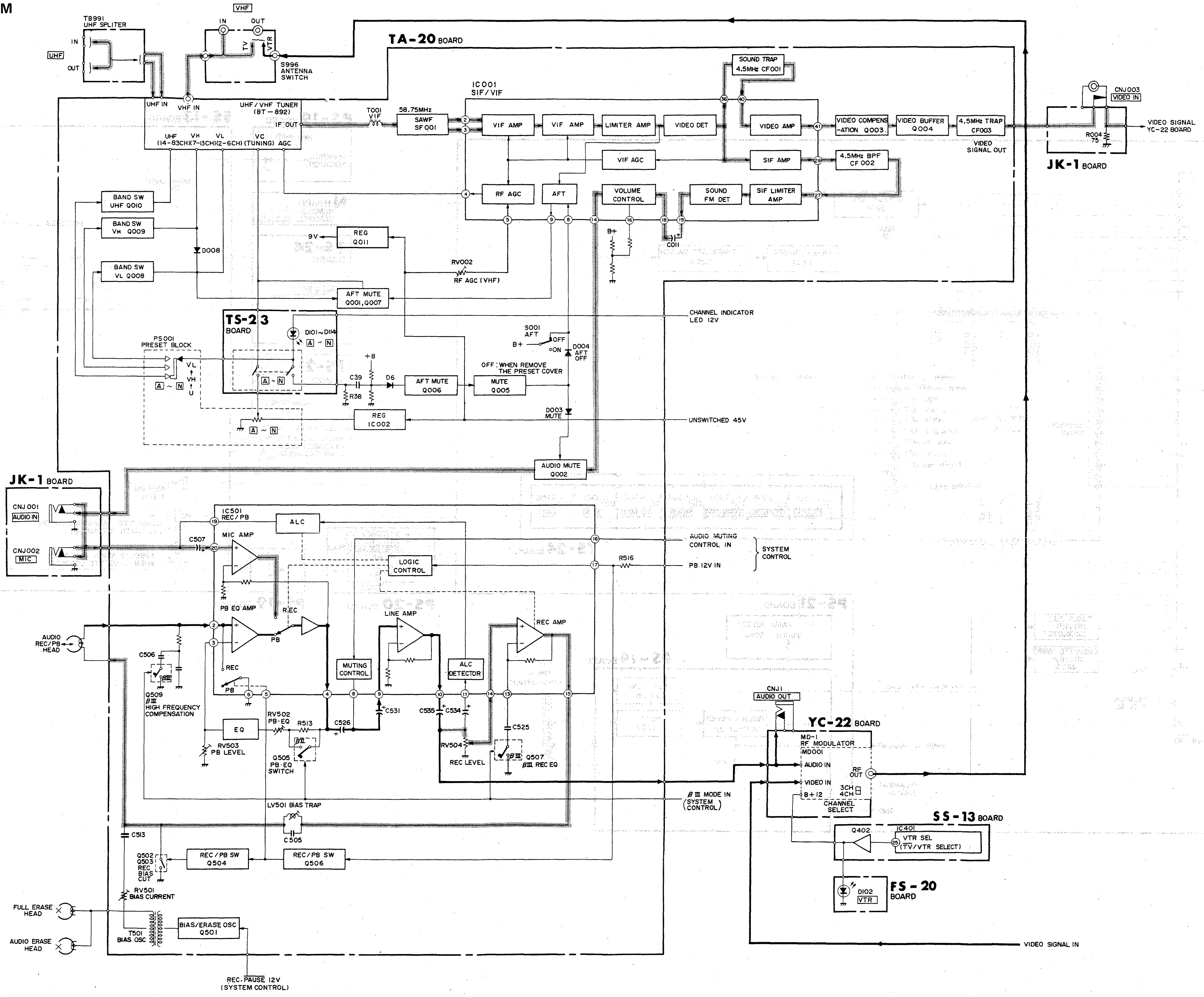
TUNER/AUDIO BLOCK DIAGRAM


TB991 UHF SPLITER
UHF
IN
OUT
VHF
IN
OUT
TV
VTR
S996 ANTENNA SWITCH
TA-12 BOARD
UHF IN
VHF IN
UHF/VHF TUNER (BT-864)
IF OUT
UHF (14-83CH)
VH (7-13CH)
VL (2-6CH)
VC (TUNING)
AGC
T001 VIF
58.75MHz SAWF SF001
IC001 SIF/VIF
VIF AMP
VIF AMP
LIMITER AMP
VIDEO DET
SOUND TRAP 4.5MHz CF001
VIDEO AMP
VIDEO COMPENSATION Q003
VIDEO BUFFER Q004
4.5MHz TRAP CF003
VIDEO SIGNAL OUT
CNJ003 VIDEO IN
R004 75
VIDEO SIGNAL YC-22 BOARD
JK-1 BOARD
VIF AGC
SIF AMP
4.5MHz BPF CF002
RF AGC
AFT
VOLUME CONTROL
SOUND FM DET
SIF LIMITER AMP
B+
C011
RV001 D001 AGC
UHF RF AGC
RV002 D002 AGC
VHF RF AGC
BAND SW UHF Q010
BAND SW VH Q009
BAND SW VL Q008
D008
D007
D009
AFT MUTE Q001,Q007
TS-23 BOARD
D101~D114
A ~ N
PS001 PRESET BLOCK
VL
VH
U
CHANNEL INDICATOR LED 12V
S001 AFT
B+
OFF
ON
D004 AFT OFF
OFF : WHEN REMOVE THE PRESET COVER
+B
C39
R38
D6
AFT MUTE Q006
MUTE Q005
D003 MUTE
REG IC002
UNSWITCHED 45V
AUDIO MUTE Q002
JK-1 BOARD
CNJ001 AUDIO IN
CNJ002 MIC
IC501 REC/PB
ALC
C507
MIC AMP
AUDIO MUTING CONTROL IN
PB 12V IN
R516
SYSTEM CONTROL
LOGIC CONTROL
PB EQ AMP
REC
PB
LINE AMP
REC AMP
AUDIO REC/PB HEAD
C506
Q509 βIII HIGH FREQUENCY COMPENSATION
MUTING CONTROL
ALC DETECTOR
RV502 PB-EQ
R513
C526
C531
C535
C534
C525
EQ
RV503 PB LEVEL
Q505 PB-EQ SWITCH
RV504
REC LEVEL
Q507 βIII REC EQ
βIII MODE IN (SYSTEM CONTROL)
LV501 BIAS TRAP
C505
C513
Q502 Q503 REC BIAS CUT
REC/PB SW Q504
REC/PB SW Q506
RV501 BIAS CURRENT
FULL ERASE HEAD
AUDIO ERASE HEAD
T501 BIAS OSC
BIAS/ERASE OSC Q501
REC. PAUSE 12V (SYSTEM CONTROL)
CNJ1 AUDIO OUT
YC-22 BOARD
MD-1 RF MODULATOR MD001
AUDIO IN
RF OUT
VIDEO IN
B+12
3CH 4CH
CHANNEL SELECT
SS-13 BOARD
Q402
IC401 VTR SEL (TV/VTR SELECT)
FS-20 BOARD
D102 VTR
VIDEO SIGNAL IN
· Main signal channel
PLAYBACK
RECORD

NEW

NEW

TUNER/AUDIO BLOCK DIAGRAM

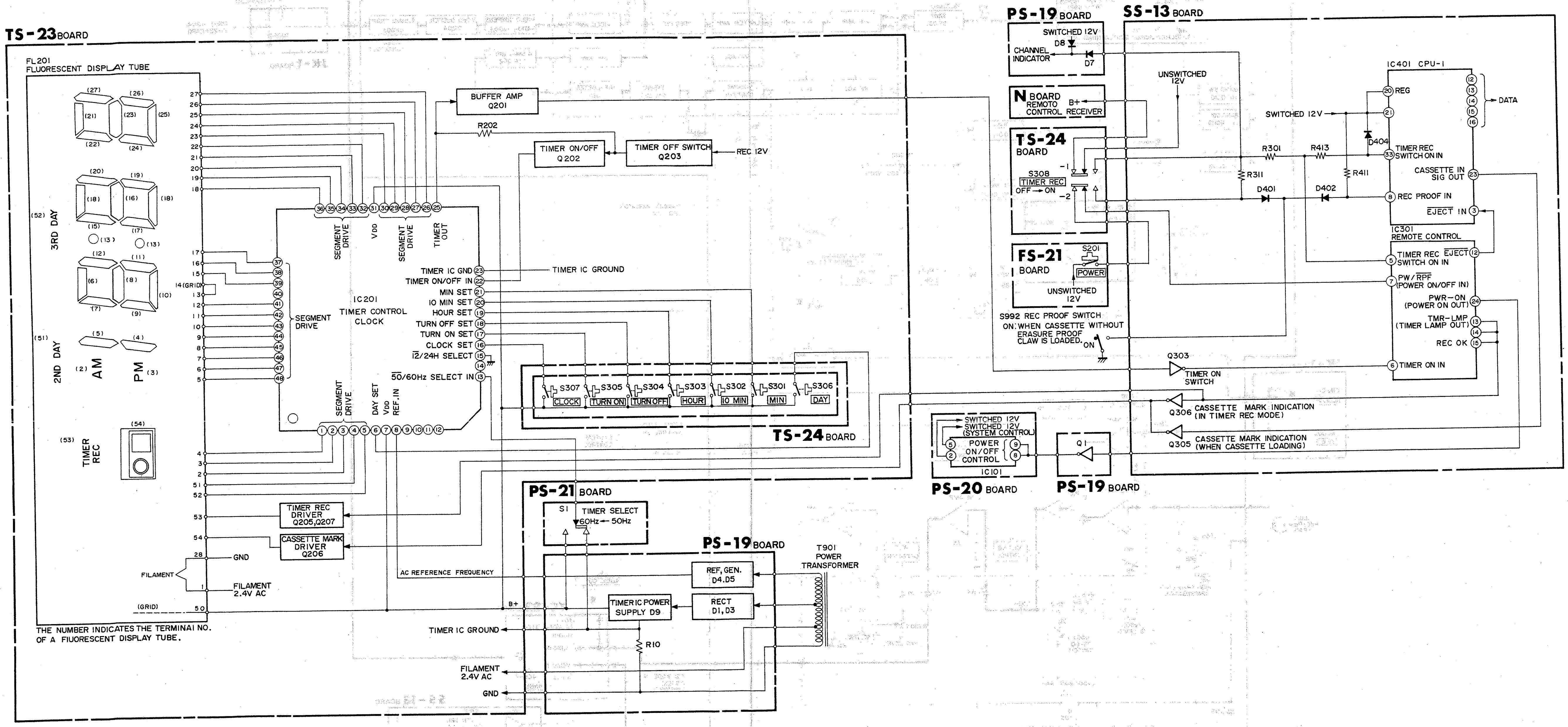

TB991
UHF SPLITER
IN
OUT
UHF
VHF
IN
OUT
TV
VTR
S996
ANTENNA
SWITCH
TA-20 BOARD
UHF IN
VHF IN
UHF / VHF TUNER
(BT-892)
IF OUT
UHF
(14-83CH)
VH
(7-13CH)
VL
(2-6CH)
VC
(TUNING)
AGC
T001
VIF
58.75MHz
SAWF
SF001
IC001
SIF/VIF
VIF AMP
VIF AMP
LIMITER AMP
VIDEO DET
SOUND TRAP
4.5MHz CF001
VIDEO AMP
VIDEO COMPENS-ATION Q003
VIDEO BUFFER
Q004
4.5MHz TRAP
CF003
VIDEO
SIGNAL OUT
VIF AGC
SIF AMP
4.5MHz BPF
CF 002
RF AGC
AFT
VOLUME
CONTROL
SOUND
FM DET
SIF LIMITER
AMP
C011
B+
CNJ003
VIDEO IN
R004
75
JK-1 BOARD
VIDEO SIGNAL
YC-22 BOARD
BAND SW
UHF Q010
BAND SW
VH Q009
BAND SW
VL Q008
D008
9V
REG
Q011
RV002
RF AGC (VHF)
AFT MUTE
Q001, Q007
TS-23
BOARD
D101~D114
A ~ N
PS001
PRESET BLOCK
VL
VH
U
A ~ N
+B
C39
R38
D6
AFT MUTE
Q006
MUTE
Q005
OFF : WHEN REMOVE
THE PRESET COVER
S001
AFT
B+
OFF
ON
D004
AFT
OFF
D003
MUTE
REG
IC002
CHANNEL INDICATOR
LED 12V
UNSWITCHED 45V
AUDIO MUTE
Q002
JK-1 BOARD
CNJ001
AUDIO IN
CNJ002
MIC
IC501
REC/PB
ALC
C507
MIC AMP
LOGIC
CONTROL
AUDIO MUTING
CONTROL IN
R516
PB 12V IN
SYSTEM
CONTROL
PB EQ AMP
REC
PB
LINE AMP
REC AMP
AUDIO
REC/PB
HEAD
C506
REC
PB
MUTING
CONTROL
ALC
DETECTOR
Q509
β III
HIGH FREQUENCY
COMPENSATION
EQ
RV502
PB·EQ
R513
C526
C531
C535
C534
C525
RV503
PB LEVEL
β II
Q505
PB·EQ
SWITCH
RV504
REC LEVEL
β III
Q507
β III REC EQ
β III MODE IN
(SYSTEM
CONTROL)
LV501 BIAS TRAP
C505
C513
Q502
Q503
REC
BIAS
CUT
REC/PB SW
Q504
REC/PB SW
Q506
RV501
BIAS CURRENT
FULL ERASE
HEAD
AUDIO ERASE
HEAD
T501
BIAS OSC
BIAS/ERASE OSC
Q501
REC. PAUSE 12V
(SYSTEM CONTROL)
CNJ1
AUDIO OUT
YC-22 BOARD
MD-1
RF MODULATOR
MD001
AUDIO IN
VIDEO IN
B+12
RF
OUT
3CH
4CH
CHANNEL
SELECT
SS-13 BOARD
Q402
IC401
VTR SEL
(TV/VTR SELECT)
FS-20
BOARD
D102
VTR
VIDEO SIGNAL IN

· **Main signal channel**

➞ PLAYBACK

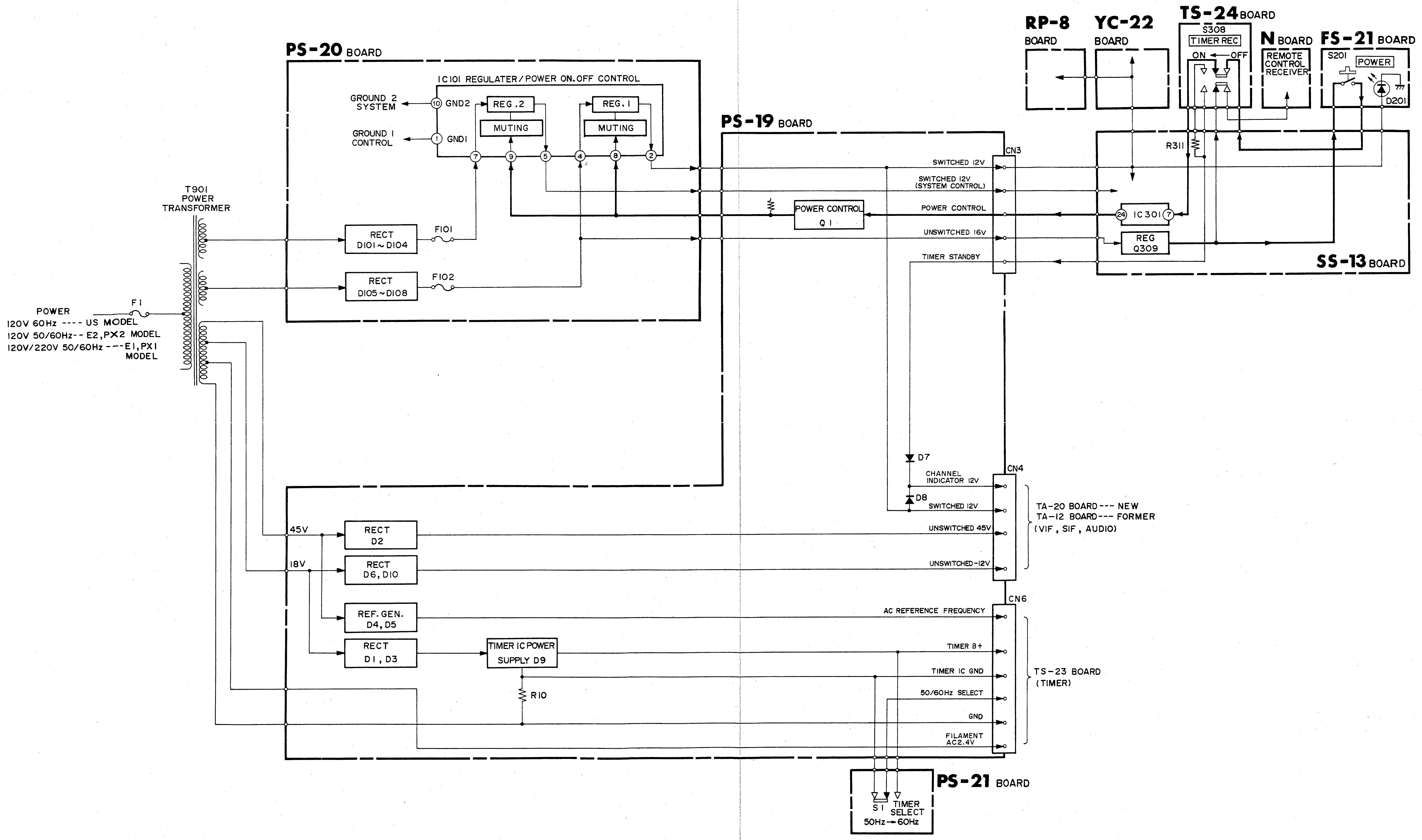
⇨ RECORD

TIMER BLOCK DIAGRAM


TS-23 BOARD
FL201
FLUORESCENT DISPLAY TUBE
3RD DAY
2ND DAY
AM
PM
TIMER REC
FILAMENT
(GRID)
GND
FILAMENT 2.4V AC
BUFFER AMP Q201
R202
TIMER ON/OFF Q202
TIMER OFF SWITCH Q203
REC 12V
SEGMENT DRIVE
VDD
TIMER OUT
IC201
TIMER CONTROL
CLOCK
TIMER IC GND
TIMER ON/OFF IN
MIN SET
10 MIN SET
HOUR SET
TURN OFF SET
TURN ON SET
CLOCK SET
12/24H SELECT
50/60Hz SELECT IN
DAY SET
REF.IN
TIMER IC GROUND
S307 CLOCK
S305 TURN ON
S304 TURN OFF
S303 HOUR
S302 10 MIN
S301 MIN
S306 DAY
TS-24 BOARD
TIMER REC DRIVER Q205,Q207
CASSETTE MARK DRIVER Q206
AC REFERENCE FREQUENCY
B+
PS-21 BOARD
S1 TIMER SELECT
60Hz — 50Hz
PS-19 BOARD
REF. GEN. D4.D5
TIMER IC POWER SUPPLY D9
RECT D1,D3
R10
T901 POWER TRANSFORMER
TIMER IC GROUND
FILAMENT 2.4V AC
GND
PS-19 BOARD
SWITCHED 12V
D8
CHANNEL INDICATOR
D7
N BOARD
REMOTO CONTROL RECEIVER
B+
TS-24 BOARD
S308 TIMER REC
OFF → ON
FS-21 BOARD
S201 POWER
UNSWITCHED 12V
S992 REC PROOF SWITCH
ON: WHEN CASSETTE WITHOUT ERASURE PROOF CLAW IS LOADED.
ON
SS-13 BOARD
UNSWITCHED 12V
SWITCHED 12V
R301
R413
R311
R411
D401
D402
D404
IC401 CPU-1
REG
DATA
TIMER REC SWITCH ON IN
CASSETTE IN SIG OUT
REC PROOF IN
EJECT IN
IC301 REMOTE CONTROL
TIMER REC SWITCH ON IN
EJECT
PW/RPF (POWER ON/OFF IN)
PWR-ON (POWER ON OUT)
TMR-LMP (TIMER LAMP OUT)
REC OK
TIMER ON IN
Q303
TIMER ON SWITCH
Q306
CASSETTE MARK INDICATION (IN TIMER REC MODE)
Q305
CASSETTE MARK INDICATION (WHEN CASSETTE LOADING)
SWITCHED 12V
SWITCHED 12V (SYSTEM CONTROL)
POWER ON/OFF CONTROL
IC101
PS-20 BOARD
Q1
PS-19 BOARD

THE NUMBER INDICATES THE TERMINAl NO. OF A FIuORESCENT DISPLAY TUBE.

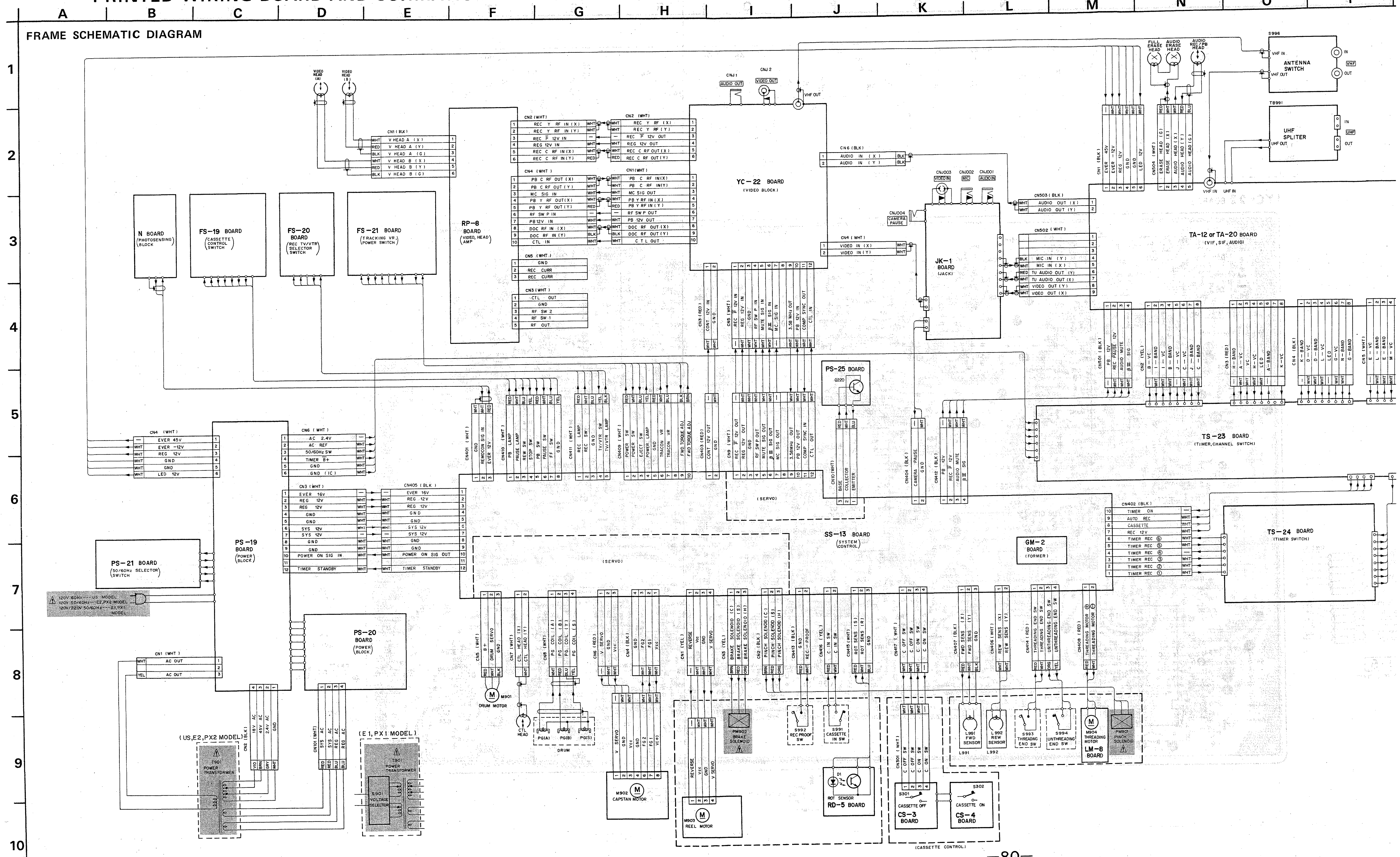
POWER SUPPLY BLOCK DIAGRAM

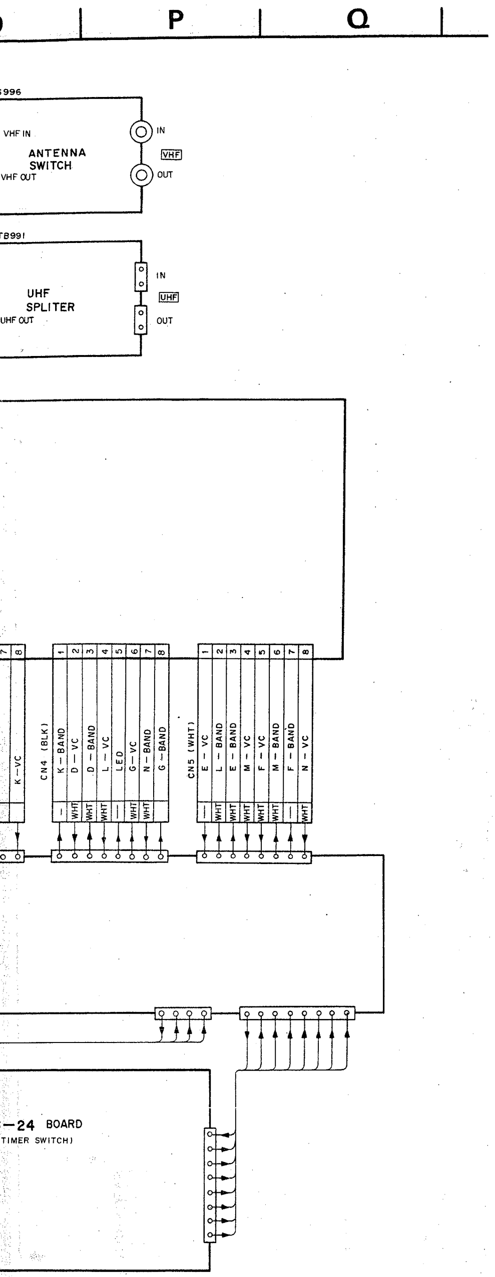

PS-20 BOARD
IC101 REGULATER/POWER ON.OFF CONTROL
GROUND 2 SYSTEM
10 GND2
REG.2
MUTING
REG.1
MUTING
GROUND 1 CONTROL
1 GND1
7
9
5
4
8
2
RECT D101~D104
F101
RECT D105~D108
F102
T901 POWER TRANSFORMER
F1
POWER
120V 60Hz ---- US MODEL
120V 50/60Hz -- E2,PX2 MODEL
120V/220V 50/60Hz ---E1,PX1 MODEL
PS-19 BOARD
CN3
SWITCHED 12V
SWITCHED 12V (SYSTEM CONTROL)
POWER CONTROL Q1
POWER CONTROL
UNSWITCHED 16V
TIMER STANDBY
RP-8 BOARD
YC-22 BOARD
TS-24 BOARD
S308
TIMER REC
ON
OFF
N BOARD
REMOTE CONTROL RECEIVER
FS-21 BOARD
S201
POWER
D201
R311
IC301
24
7
REG Q309
SS-13 BOARD
D7
CN4
CHANNEL INDICATOR 12V
D8
SWITCHED 12V
UNSWITCHED 45V
UNSWITCHED -12V
TA-20 BOARD --- NEW
TA-12 BOARD --- FORMER
(VIF, SIF, AUDIO)
45V
RECT D2
18V
RECT D6, D10
REF. GEN. D4, D5
RECT D1, D3
TIMER IC POWER SUPPLY D9
R10
CN6
AC REFERENCE FREQUENCY
TIMER B+
TIMER IC GND
50/60Hz SELECT
GND
FILAMENT AC2.4V
TS-23 BOARD (TIMER)
PS-21 BOARD
S1
TIMER SELECT
50Hz→60Hz

SECTION 3

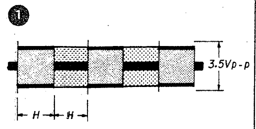
PRINTED WIRING BOARD AND SCHMATIC DIAGRAM

FRAME SCHEMATIC DIAGRAM

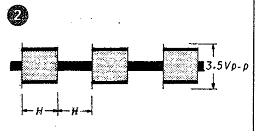

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
VIDEO HEAD (A)
VIDEO HEAD (B)
CN1 (BLK)
V HEAD A (X)
V HEAD A (Y)
V HEAD A (G)
V HEAD B (X)
V HEAD B (Y)
V HEAD B (G)
RP-8 BOARD (VIDEO, HEAD AMP)
YC-22 BOARD (VIDEO BLOCK)
CNJ1 AUDIO OUT
CNJ2 VIDEO OUT
VHF OUT
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO REC/PB HEAD
S996 ANTENNA SWITCH
VHF IN
VHF OUT
T8991 UHF SPLITER
UHF OUT
N BOARD (PHOTOSENSING BLOCK)
FS-19 BOARD (CASSETTE CONTROL SWITCH)
FS-20 BOARD (REC TV/VTR SELECTOR SWITCH)
FS-21 BOARD (TRACKING VR, POWER SWITCH)
CN6 (BLK)
AUDIO IN (X)
AUDIO IN (Y)
CNJ003 VIDEO IN
CNJ002 MIC
CNJ001 AUDIO IN
CNJ004 CAMERA PAUSE
JK-1 BOARD (JACK)
CN503 (BLK)
AUDIO OUT (X)
AUDIO OUT (Y)
CN502 (WHT)
MIC IN (Y)
MIC IN (X)
TU AUDIO OUT (Y)
TU AUDIO OUT (X)
VIDEO OUT (Y)
VIDEO OUT (X)
TA-12 or TA-20 BOARD (VIF, SIF, AUDIO)
CN4 (WHT)
VIDEO IN (X)
VIDEO IN (Y)
PS-25 BOARD
Q220
TS-23 BOARD (TIMER, CHANNEL SWITCH)
TS-24 BOARD (TIMER SWITCH)
CN402 (BLK)
TIMER ON
AUTO REC
CASSETTE
REC 12V
PS-19 BOARD (POWER BLOCK)
PS-21 BOARD (50/60Hz SELECTOR SWITCH)
PS-20 BOARD (POWER BLOCK)
120V 60Hz---US MODEL
120V 50/60Hz---E2, PX2 MODEL
120V/220V 50/60Hz---E1, PX1 MODEL
CN4 (WHT)
EVER 45V
EVER -12V
REG 12V
GND
LED 12V
CN6 (WHT)
AC 2.4V
AC REF
50/60Hz SW
TIMER B+
CN3 (WHT)
CN405 (BLK)
EVER 16V
SYS 12V
POWER ON SIG IN
POWER ON SIG OUT
TIMER STANDBY
CN1 (WHT)
AC OUT
SS-13 BOARD (SYSTEM CONTROL)
GM-2 BOARD (FORMER)
(SERVO)
(US, E2, PX2 MODEL)
T901 POWER TRANSFORMER
(E1, PX1 MODEL)
S901 VOLTAGE SELECTOR
M901 DRUM MOTOR
CTL HEAD
DRUM
PG(A)
PG(B)
PG(S)
M902 CAPSTAN MOTOR
M903 REEL MOTOR
PM902 BRAKE SOLENOID
S992 REC PROOF SW
S991 CASSETTE IN SW
D1 ROT SENSOR
RD-5 BOARD
S301 CASSETTE OFF
CS-3 BOARD
S302 CASSETTE ON
CS-4 BOARD
(CASSETTE CONTROL)
L991 FWD SENSOR
L992 REW SENSOR
S993 THREADING END SW
S994 UNTHREADING END SW
M904 THREADING MOTOR
LM-8 BOARD
PM901 PINCH SOLENOID


P
Q
VHF IN
ANTENNA SWITCH
VHF OUT
IN
VHF
OUT
UHF SPLITER
UHF OUT
IN
UHF
OUT
K – VC
CN4 (BLK)
CN5 (WHT)
-24 BOARD
TIMER SWITCH)

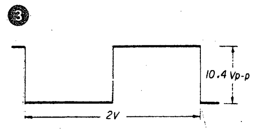
YC-22 BOARD

❶


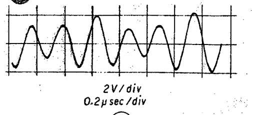
IC1 ① REC/PB

❷


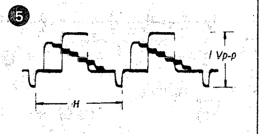
IC2 ② REC/PB

❸


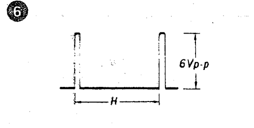
IC1 ③ REC/PB RF SWITCHING PULSE

❹


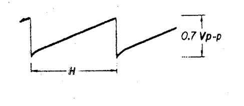
IC1 ④ REC/PB

❺


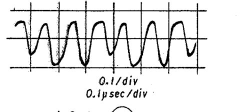
IC1 ⑰ REC/PB

❻


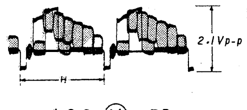
IC1 ⑳ REC/PB

❼


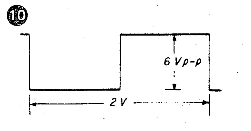
IC1 ㉑ REC/PB

❽


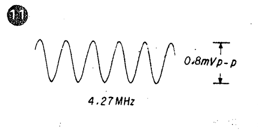
IC2 ① PB

❾


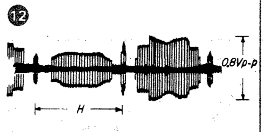
IC2 ⑪ PB

❿


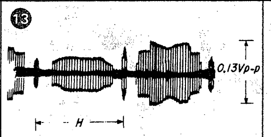
IC2 ⑫ PB

⓫


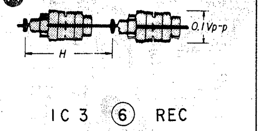
IC3 ① REC/PB 4.27MHz CARRIER

⓬


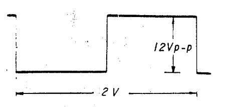
IC3 ③ PB

⓭


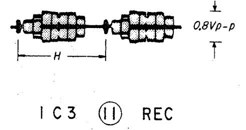
IC3 ⑤ PB

⓮


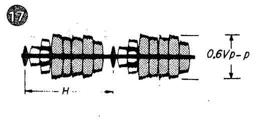
IC3 ⑥ REC

⓯


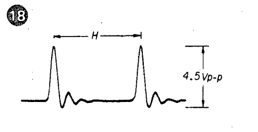
IC3 ⑧ REC

⓰


IC3 ⑪ REC

⓱


IC3 ⑪ PB

⓲


IC3 ⑯ REC/PB

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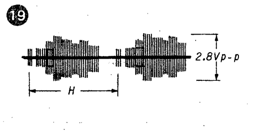
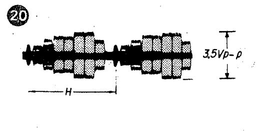
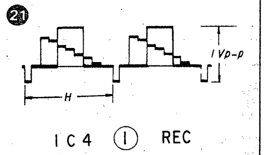


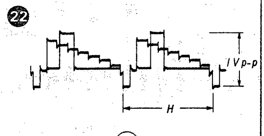
IC3 ㉔ REC

⓴


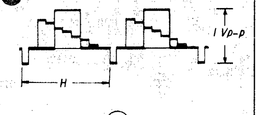
IC3 ㉔ PB

㉑


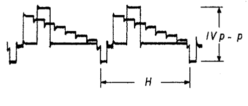
IC4 ① REC

㉒


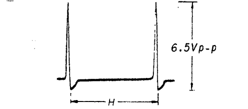
IC4 ① PB

㉓


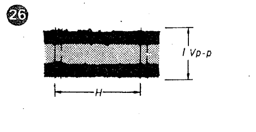
IC4 ② REC

㉔


IC4 ② PB

㉕


IC4 ④ REC/PB

㉖


IC4 ⑥ PB

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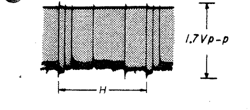
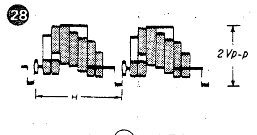
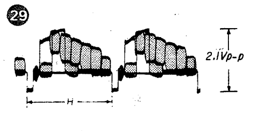


IC4 ⑫ PB

㉘


IC4 ⑯ REC

㉙


IC4 ⑯ PB

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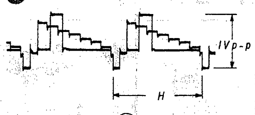

IC4 ㉑ PB

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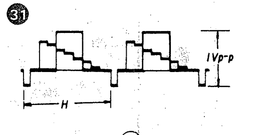
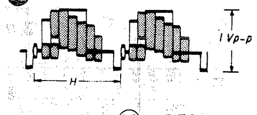
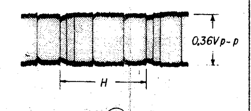


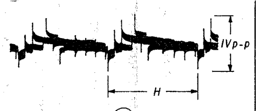
IC4 ㉒ REC

㉜


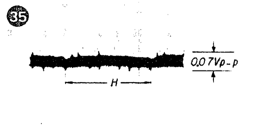
IC4 ㉔ REC

㉝


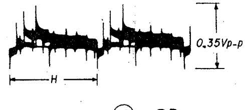
IC4 ① PB

㉞


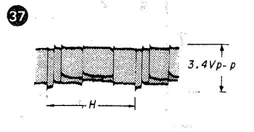
IC5 ⑤ PB

㉟


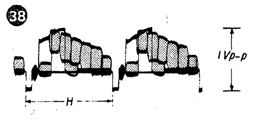
IC5 ⑩ PB

㊱


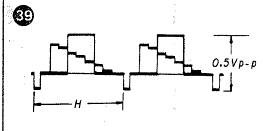
IC2 ⑫ PB

㊲


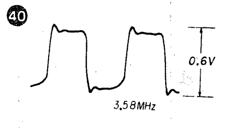
IC5 ㉑ PB

㊳


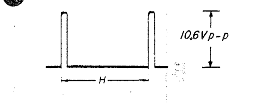
TP-2 REC/PB

㊴


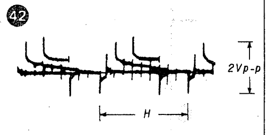
Q25 Ⓔ REC

㊵


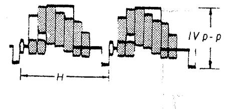
TP-3 PB

㊶


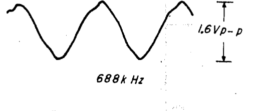
TP-5 REC/PB

㊷


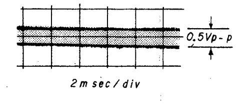
TP-6 REC

㊸


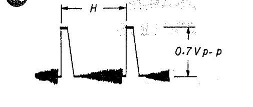
TP-10 REC

㊹


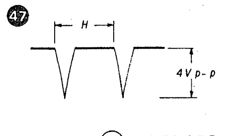
TP-11 REC/PB

㊺


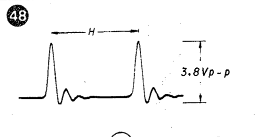
TP-12 PB

㊻


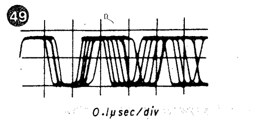
Q18 Ⓑ βIII REC/PB

㊼


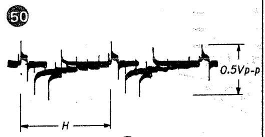
Q33 Ⓒ REC/PB

㊽


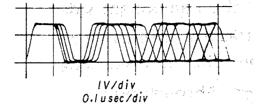
Q33 Ⓔ REC/PB

㊾


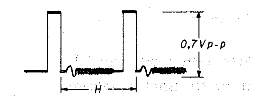
Q54 Ⓔ REC

㊿


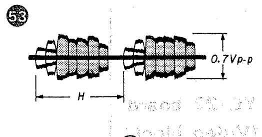
Q55 Ⓒ PB

(51)


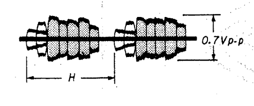
Q57 Ⓔ PB

(52)


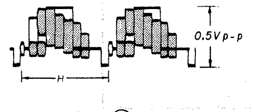
Q11 Ⓑ βIII PB

(53)


Q11 Ⓒ PB

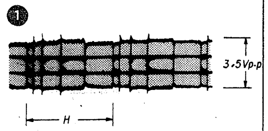
(54)


Q24 Ⓔ PB

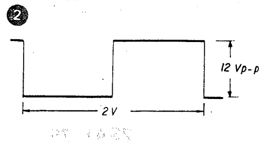
(55)


Q24 Ⓔ REC

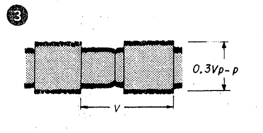
RP-8 BOARD

❶


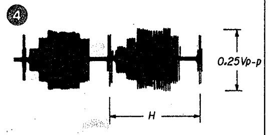
IC1 ⑪ ,TP-2 REC

❷


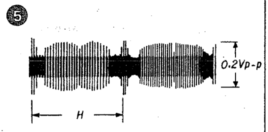
TP-5 PB RF SWITCHING PULSE

❸


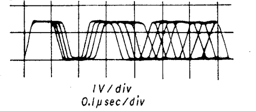
TP-6 PB

❹


CN2 ⑤ REC

❺


CN4 ① PB

❻


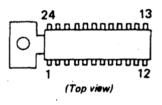
CN4 ④ PB

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

YC-22 (Y & CHROMA SIGNALS RECORD/PLAYBACK PROCESS) **RP-8** (PB CHROMA RF SIGNAL, Y-FM SIGNAL, RECORD/PLAYBACK)

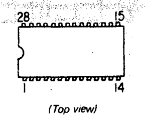
– Ref. No. YC-22 BOARD: 1000 series, RP-8 BOARD: 2000 series –

CX134A
CX135
CX187
CX188
CX196A
CX822



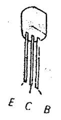
24
13
1
12
(Top view)

CX862

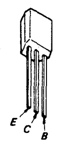


28
15
1
14
(Top view)

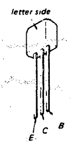
2SA733
2SA844
2SA925
2SC1815



2SA1048
2SA1115
2SC2458
2SC2603
2SC403SP

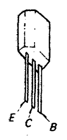


2SA1175
2SC2785

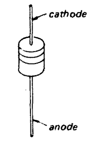


letter side
E C B

2SC403C

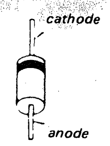


1SS119
1SS148



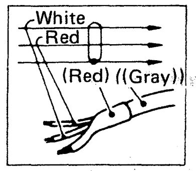
cathode
anode

1SS133



cathode
anode

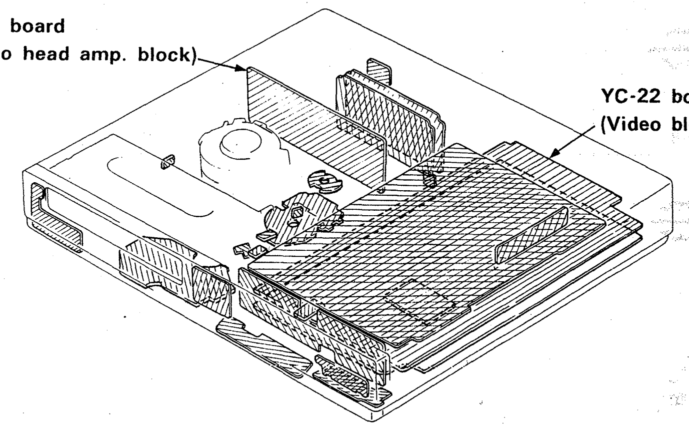
- Color code of sleeving over the end of the jacket.



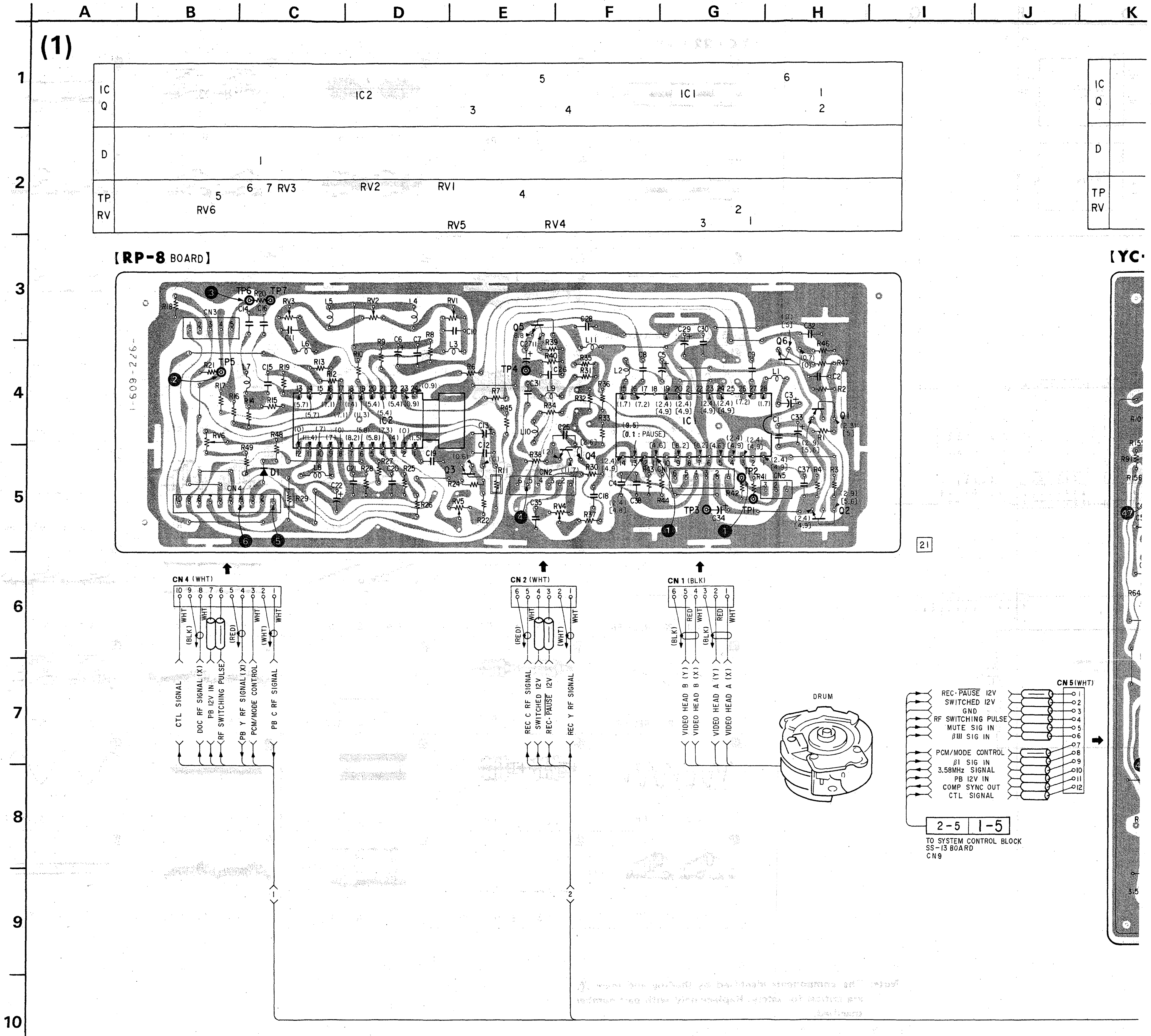
White
Red
(Red) ((Gray))

- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- Through hole
- ▨ Soldering side
- ▨ B + pattern
- [ ]← indicates side identified with part number.

[BOARD ARRANGEMENT]



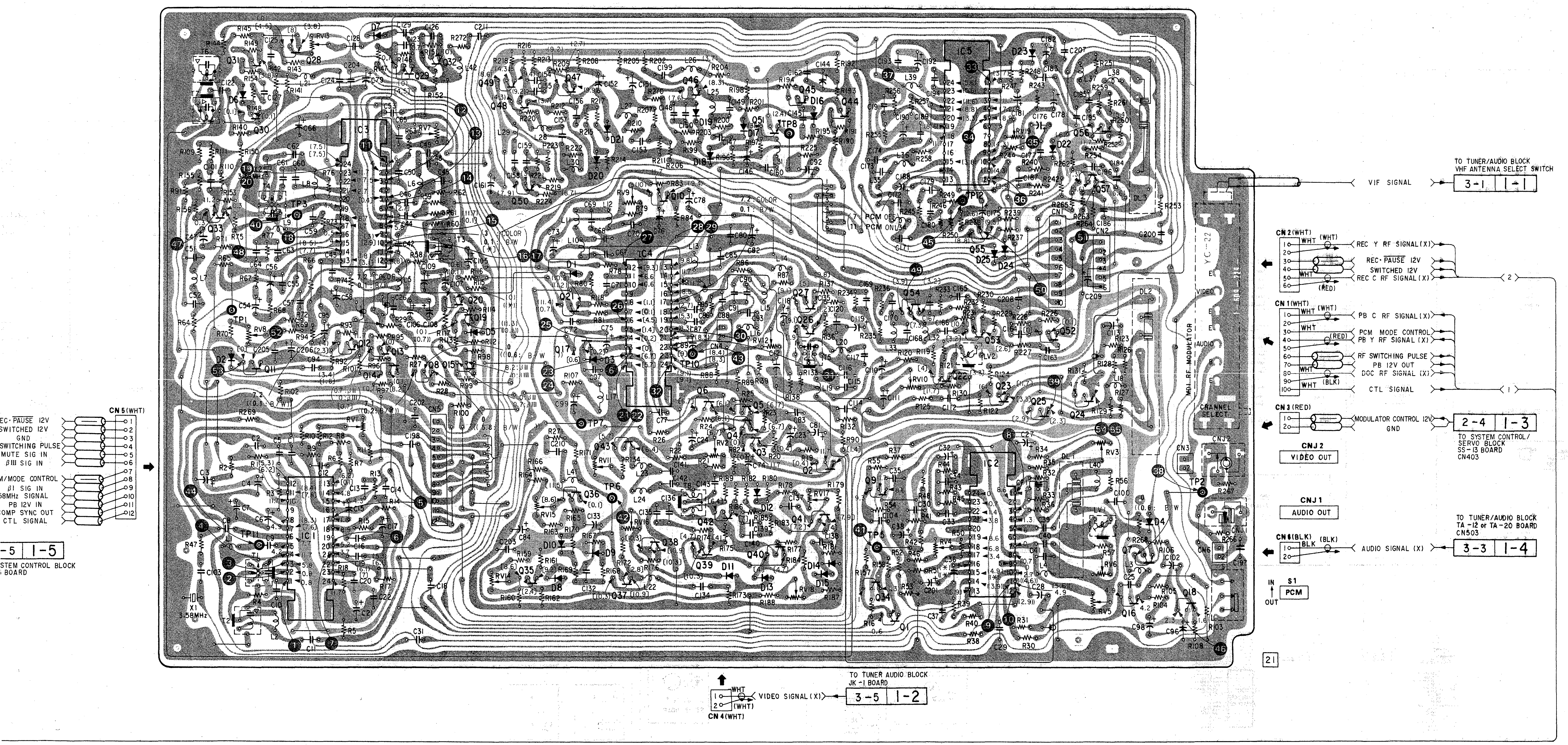
RP-8 board
(Video head amp. block)
YC-22 board
(Video block)



A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
9
10
(1)
IC
Q
D
TP
RV
IC2
IC1
RV6
RV3
RV2
RV1
RV5
RV4
[RP-8 BOARD]
1-972-609-
TP5
TP6
TP7
TP4
TP3
TP1
TP2
IC2
IC
21
CN4 (WHT)
CTL SIGNAL
DOC RF SIGNAL (X)
PB 12V IN
RF SWITCHING PULSE
PB Y RF SIGNAL (X)
PCM/MODE CONTROL
PB C RF SIGNAL
CN2 (WHT)
REC C RF SIGNAL
SWITCHED 12V
REC·PAUSE 12V
REC Y RF SIGNAL
CN1 (BLK)
VIDEO HEAD B (Y)
VIDEO HEAD B (X)
VIDEO HEAD A (Y)
VIDEO HEAD A (X)
DRUM
CN5 (WHT)
REC·PAUSE 12V
SWITCHED 12V
GND
RF SWITCHING PULSE
MUTE SIG IN
βIII SIG IN
PCM/MODE CONTROL
βI SIG IN
3.58MHz SIGNAL
PB 12V IN
COMP SYNC OUT
CTL SIGNAL
2-5
1-5
TO SYSTEM CONTROL BLOCK
SS-13 BOARD
CN9
[YC-

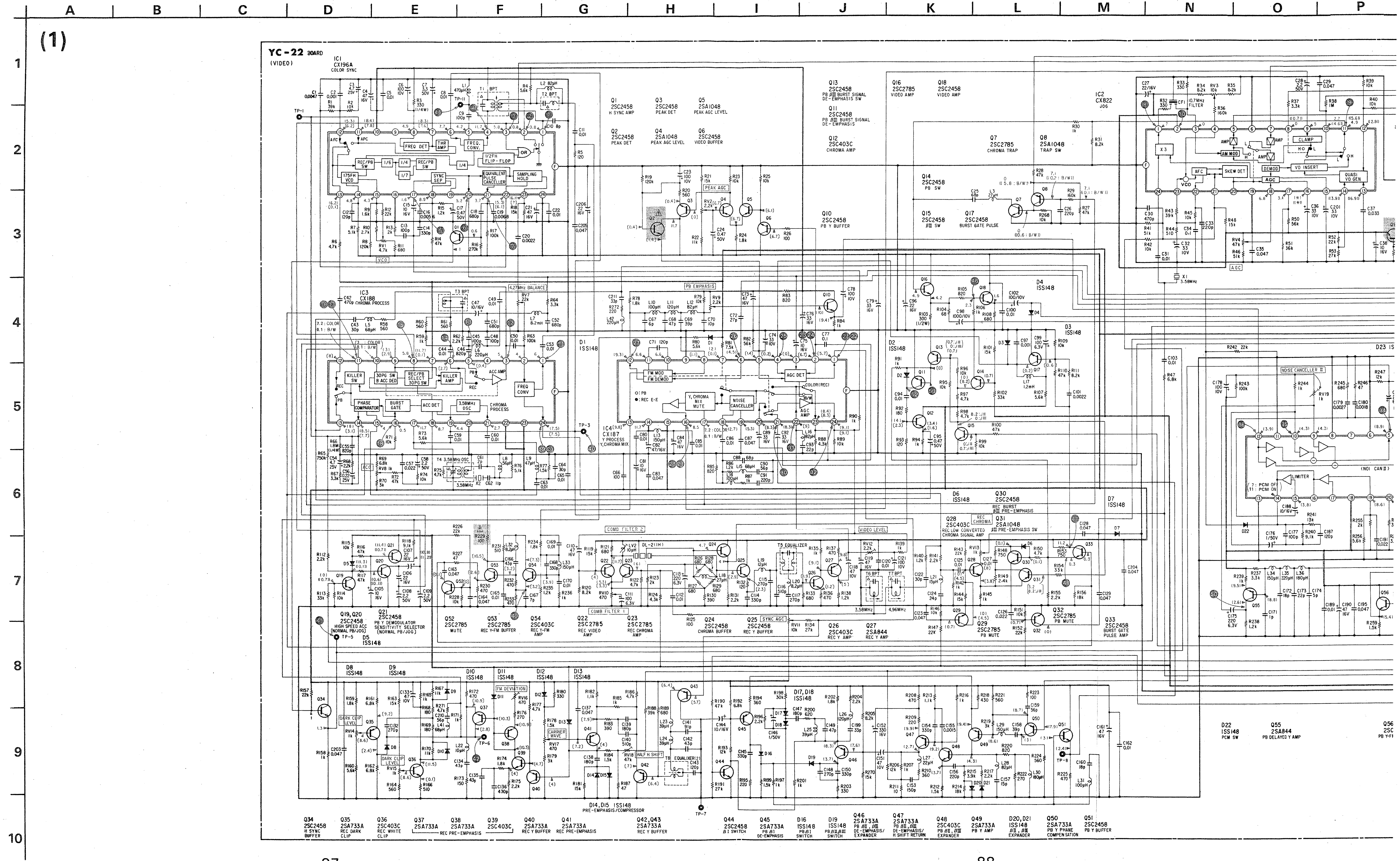
	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
IC Q		33	31 30 11 28 IC1	IC3 12 13 14 29 32 8	20,19 15 49 48 50 35	47 21 17 36 43 37	38 10 IC4 46 6 39 42 5 4	3 51 45 40 27 26 2 41 44	9 34,1 54 22	IC5 55 53 23 IC2 52 25	57 56 24 16 7	18				
D			6 2	7	5	1 20 21 3 9 10 8	19 18 11	17 12 13 16 15 14		25,24 23	22 4					
TP RV		1	RV8 11 3 RV13	RV1 RV7	RV14	RV15 7 RV11 6 RV9 RV16	10 RV2	RV12 RV18 RV17	5 RV10 RV4	12 LV2 RV19	RV3 LV1 RV6 RV5	2				

[YC-22 BOARD]

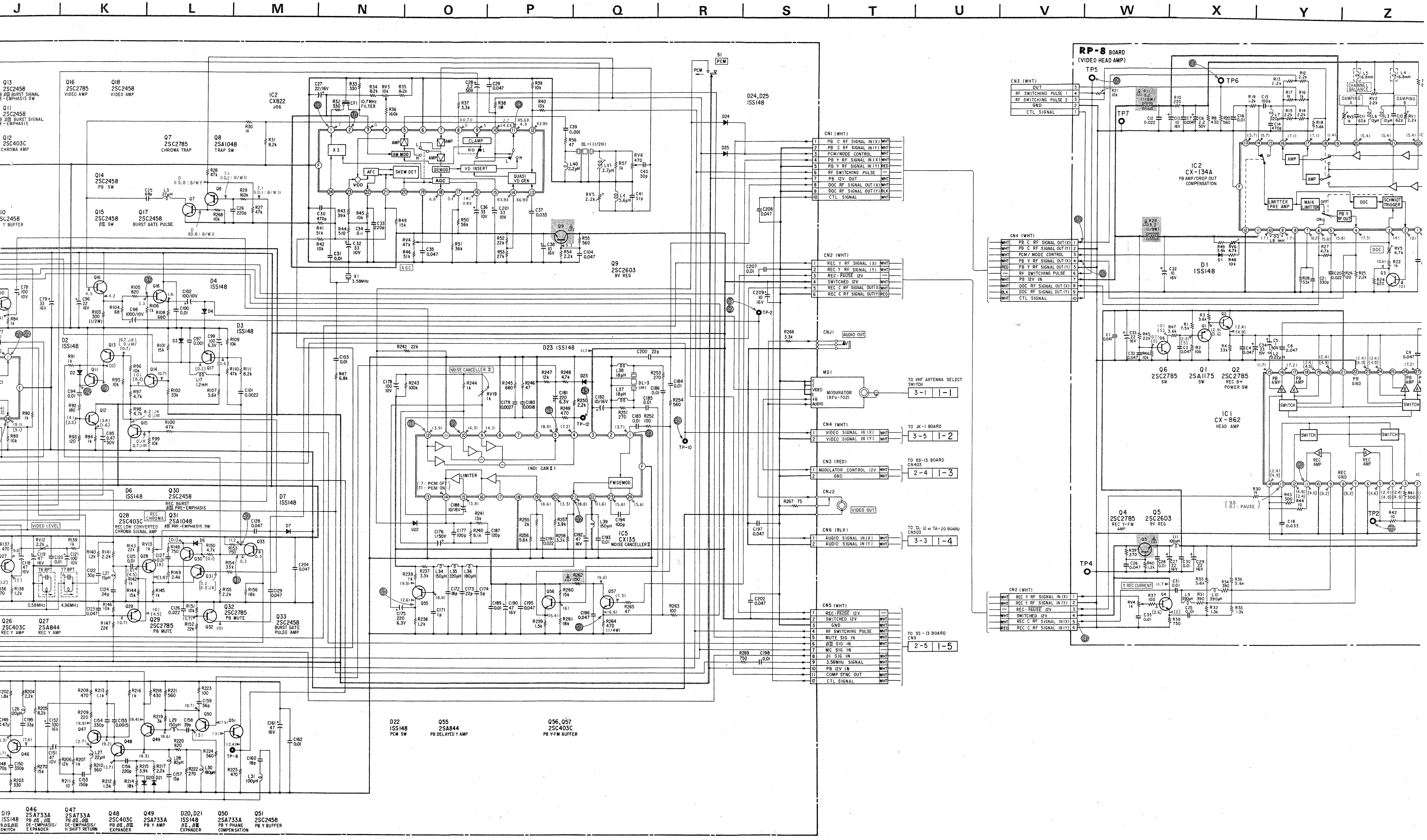

VIF SIGNAL
TO TUNER/AUDIO BLOCK
VHF ANTENNA SELECT SWITCH
3-1 1-1
CN2 (WHT)
REC Y RF SIGNAL (X)
REC·PAUSE 12V
SWITCHED 12V
REC C RF SIGNAL (X)
CN1 (WHT)
PB C RF SIGNAL (X)
PCM MODE CONTROL
PB Y RF SIGNAL (X)
RF SWITCHING PULSE
PB 12V OUT
DOC RF SIGNAL (X)
CTL SIGNAL
CN3 (RED)
MODULATOR CONTROL 12V
GND
2-4 1-3
TO SYSTEM CONTROL/
SERVO BLOCK
SS-13 BOARD
CN403
CNJ2
VIDEO OUT
CNJ1
AUDIO OUT
TO TUNER/AUDIO BLOCK
TA-12 or TA-20 BOARD
CN503
CN6 (BLK)
AUDIO SIGNAL (X)
3-3 1-4
S1
IN
OUT
PCM
CN4 (WHT)
VIDEO SIGNAL (X)
TO TUNER AUDIO BLOCK
JK-1 BOARD
3-5 1-2
CN5 (WHT)
EC·PAUSE 12V
SWITCHED 12V
GND
SWITCHING PULSE
MUTE SIG IN
βIII SIG IN
M/MODE CONTROL
β1 SIG IN
58MHz SIGNAL
PB 12V IN
OMP SYNC OUT
CTL SIGNAL
-5 1-5
STEM CONTROL BLOCK
BOARD
X1
3.58MHz
YC-22
M01 RF MODULATOR
CHANNEL SELECT
21

YC-22 (Y & CHROMA SIGNALS RECORD/PLAYBACK PROCESS) **RP-8** (PB CHROMA RF SIGNAL, Y-FM SIGNAL, RECORD/PLAYBACK) – Ref. No. YC-22 BOARD: 1000 series, RP-8 BOARD: 2000 series –

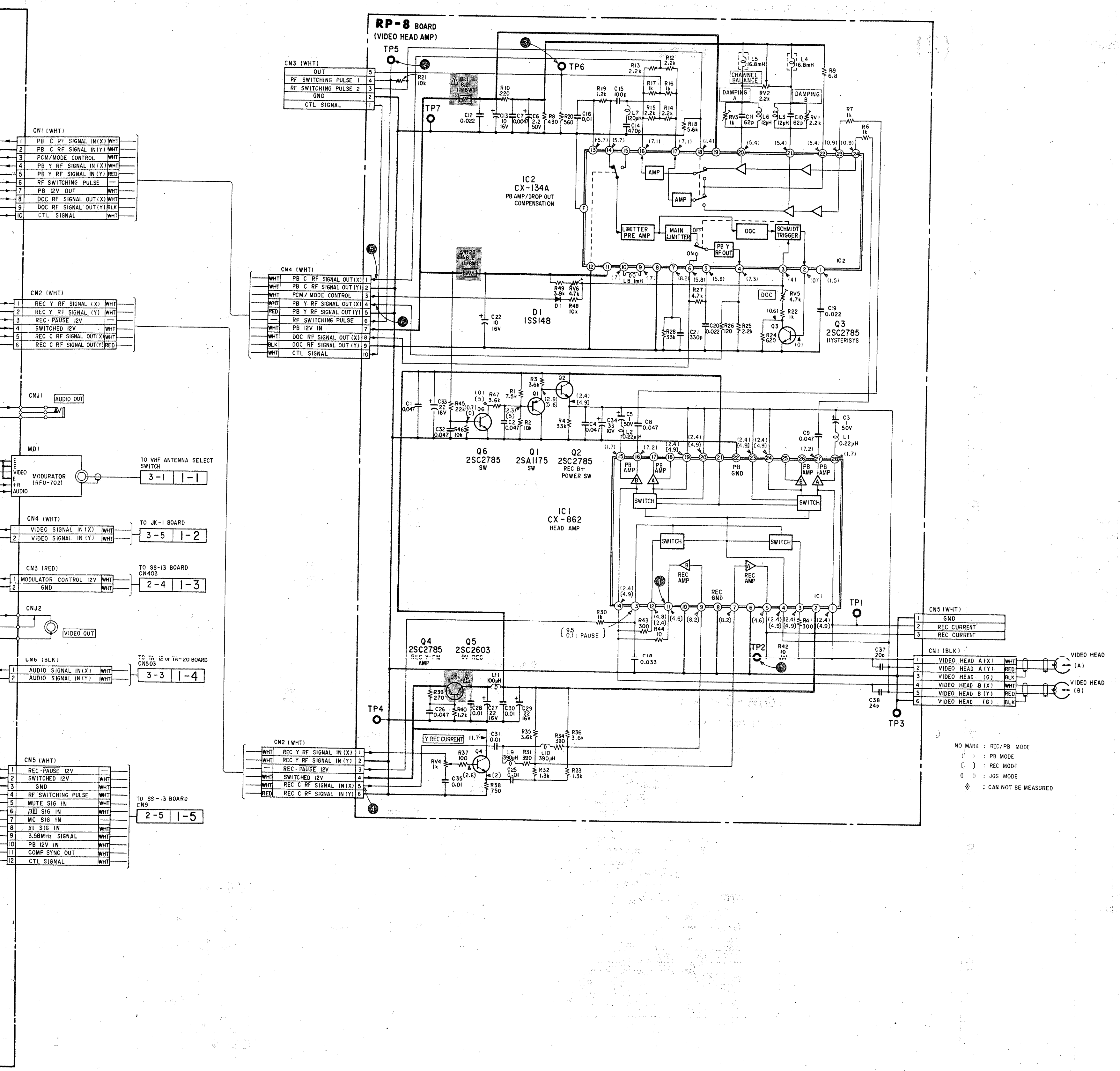
(1)


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
YC-22 BOARD (VIDEO)
IC1 CX196A COLOR SYNC
IC2 CX822 JOG
IC3 CX188 CHROMA PROCESS
IC4 CX187 Y PROCESS Y, CHROMA MIX
Q1 2SC2458 H SYNC AMP
Q2 2SC2458 PEAK DET
Q3 2SC2458 PEAK DET
Q4 2SA1048 PEAK AGC LEVEL
Q5 2SA1048 PEAK AGC LEVEL
Q6 2SC2458 VIDEO BUFFER
Q7 2SC2785 CHROMA TRAP
Q8 2SA1048 TRAP SW
Q10 2SC2458 PB Y BUFFER
Q11 2SC2458 PB BURST SIGNAL DE-EMPHASIS
Q12 2SC403C CHROMA AMP
Q13 2SC2458 PB BURST SIGNAL DE-EMPHASIS SW
Q14 2SC2458 PB SW
Q15 2SC2458 SW
Q16 2SC2785 VIDEO AMP
Q17 2SC2785 BURST GATE PULSE
Q18 2SC2458 VIDEO AMP
Q19, Q20 2SC2458 HIGH SPEED ACC (NORMAL PB/JOG)
Q21 2SC2458 PB Y DEMODULATOR SENSITIVITY SELECTOR (NORMAL PB/JOG)
Q22 2SC2785 REC VIDEO AMP
Q23 2SC2785 REC CHROMA AMP
Q24 2SC2458 CHROMA BUFFER
Q25 2SC2458 REC Y BUFFER
Q26 2SC403C REC Y AMP
Q27 2SA844 REC Y AMP
Q28 2SC403C REC LOW CONVERTED CHROMA SIGNAL AMP
Q29 2SC2785 PB MUTE
Q30 2SC2458 REC BURST PRE-EMPHASIS
Q31 2SA1048 PRE-EMPHASIS SW
Q32 2SC2785 PB MUTE
Q33 2SC2458 BURST GATE PULSE AMP
Q34 2SC2458 H SYNC BUFFER
Q35 2SA733A REC DARK CLIP
Q36 2SC403C REC WHITE CLIP
Q37 2SA733A
Q38 2SA733A REC PRE-EMPHASIS
Q39 2SC403C
Q40 2SA733A REC Y BUFFER
Q41 2SA733A REC PRE-EMPHASIS
Q42, Q43 2SA733A REC Y BUFFER
Q44 2SC2458 SWITCH
Q45 2SA733A PB DE-EMPHASIS
Q46 2SA733A DE-EMPHASIS/EXPANDER
Q47 2SA733A DE-EMPHASIS/H SHIFT RETURN
Q48 2SC403C EXPANDER
Q49 2SA733A PB Y AMP
Q50 2SA733A PB Y PHASE COMPENSATION
Q51 2SC2458 PB Y BUFFER
Q52 2SC2785 MUTE
Q53 2SC2785 REC Y-FM BUFFER
Q54 2SC403C REC Y-FM AMP
Q55 2SA844 PB DELAYED Y AMP
D1 1SS148
D2 1SS148
D3 1SS148
D4 1SS148
D5 1SS148
D6 1SS148
D7 1SS148
D8 1SS148
D9 1SS148
D10 1SS148
D11 1SS148
D12 1SS148
D13 1SS148
D14, D15 1SS148 PRE-EMPHASIS/COMPRESSOR
D16 1SS148 DE-EMPHASIS
D17, D18 1SS148
D19 1SS148 SWITCH
D20, D21 1SS148 EXPANDER
D22 1SS148 PCM SW
D23 1SS148
VCO
ACC
PEAK AGC
PB EMPHASIS
4.27MHz BALANCE
COMB FILTER 2
COMB FILTER 1
VIDEO LEVEL
SYNC AGC
FM DEVIATION
CARRIER WAVE
HALF H SHIFT
T5 EQUALIZER
T6 EQUALIZER
DARK CLIP LEVEL
NOISE CANCELLER II
AGC
LIMITER
TP-1
TP-3
TP-5
TP-6
TP-7
TP-8

YC-22 BOARD: 1000 series, RP-8 BOARD: 2000 series —

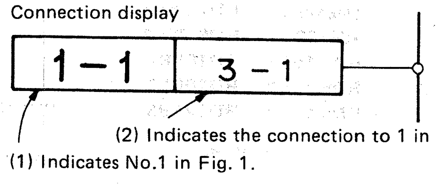

J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
IC2 CX822 J06
IC5 CX135 NOISE CANCELLER II
NOISE CANCELLER II
D23 1SS148
Q9 2SC2603 9V REG
D24,D25 1SS148
S1 PCM
CN1 (WHT)
CN2 (WHT)
CN3 (RED)
CN4 (WHT)
CN5 (WHT)
CN6 (BLK)
CNJ1 AUDIO OUT
CNJ2 VIDEO OUT
MD1 MODURATOR (RFU-7021)
TO VHF ANTENNA SELECT SWITCH
TO JK-1 BOARD
TO SS-13 BOARD CN403
TO TA-12 or TA-20 BOARD CN503
TO SS-13 BOARD CN9
3-1 1-1
3-5 1-2
2-4 1-3
3-3 1-4
2-5 1-5
RP-8 BOARD (VIDEO HEAD AMP)
IC2 CX-134A PB AMP/DROP OUT COMPENSATION
IC1 CX-862 HEAD AMP
Q1 2SA1175 SW
Q2 2SC2785 REC B+ POWER SW
Q4 2SC2785 REC Y-FM AMP
Q5 2SC2603 9V REG
Q6 2SC2785 SW
D1 1SS148
TP2
TP4
TP5
TP6
TP7
Q13 2SC2458 BURST SIGNAL DE-EMPHASIS SW
Q16 2SC2785 VIDEO AMP
Q18 2SC2458 VIDEO AMP
Q7 2SC2785 CHROMA TRAP
Q8 2SA1048 TRAP SW
Q14 2SC2458 PB SW
Q15 2SC2458 PB SW
Q17 2SC2458 BURST GATE PULSE
D6 1SS148
Q30 2SC2458 REC BURST PB PRE-EMPHASIS
Q28 2SC403C REC LOW CONVERTED CHROMA SIGNAL AMP
Q31 2SA1048 PRE-EMPHASIS SW
Q29 2SC2785 PB MUTE
Q32 2SC2785 PB MUTE
Q33 2SC2458 BURST GATE PULSE AMP
Q26 2SC403C REC Y AMP
Q27 2SA844 REC Y AMP
D7 1SS148
D22 1SS148 PCM SW
Q55 2SA844 PB DELAYED Y AMP
Q56,Q57 2SC403C PB Y-FM BUFFER
D19 1SS148 SWITCH
Q46 2SA733A DE-EMPHASIS/EXPANDER
Q47 2SA733A DE-EMPHASIS/H SHIFT RETURN
Q48 2SC403C EXPANDER
Q49 2SA733A PB Y AMP
D20,D21 1SS148 EXPANDER
Q50 2SA733A PB Y PHANE COMPENSATION
Q51 2SC2458 PB Y BUFFER
VIDEO LEVEL

T U V W X Y Z A1 B1 C1 D1 E1 F1


RP-8 BOARD
(VIDEO HEAD AMP)
CN1 (WHT)
1 PB C RF SIGNAL IN(X) WHT
2 PB C RF SIGNAL IN(Y) WHT
3 PCM/MODE CONTROL WHT
4 PB Y RF SIGNAL IN(X) WHT
5 PB Y RF SIGNAL IN(Y) RED
6 RF SWITCHING PULSE —
7 PB 12V OUT WHT
8 DOC RF SIGNAL OUT(X) WHT
9 DOC RF SIGNAL OUT(Y) BLK
10 CTL SIGNAL WHT
CN2 (WHT)
1 REC Y RF SIGNAL (X) WHT
2 REC Y RF SIGNAL (Y) WHT
3 REC·PAUSE 12V —
4 SWITCHED 12V WHT
5 REC C RF SIGNAL OUT(X) WHT
6 REC C RF SIGNAL OUT(Y) RED
CNJ1
AUDIO OUT
MD1
E
E
VIDEO
E
+B
AUDIO
MODURATOR (RFU-702)
TO VHF ANTENNA SELECT SWITCH
3-1 1-1
CN4 (WHT)
1 VIDEO SIGNAL IN(X) WHT
2 VIDEO SIGNAL IN(Y) WHT
TO JK-1 BOARD
3-5 1-2
CN3 (RED)
1 MODULATOR CONTROL 12V WHT
2 GND WHT
TO SS-13 BOARD CN403
2-4 1-3
CNJ2
VIDEO OUT
CN6 (BLK)
1 AUDIO SIGNAL IN(X) WHT
2 AUDIO SIGNAL IN(Y) WHT
TO TA-12 or TA-20 BOARD CN503
3-3 1-4
CN5 (WHT)
1 REC·PAUSE 12V —
2 SWITCHED 12V WHT
3 GND WHT
4 RF SWITCHING PULSE WHT
5 MUTE SIG IN WHT
6 βIII SIG IN WHT
7 MC SIG IN —
8 βI SIG IN WHT
9 3.58MHz SIGNAL WHT
10 PB 12V IN WHT
11 COMP SYNC OUT WHT
12 CTL SIGNAL WHT
TO SS-13 BOARD CN9
2-5 1-5
CN3 (WHT)
5 OUT
4 RF SWITCHING PULSE 1
3 RF SWITCHING PULSE 2
2 GND
1 CTL SIGNAL
TP5
TP6
TP7
R21 10k
R11 8.2 (1/8W)
R10 220
C12 0.022
C13 10 16V
C7 0.0047
C6 2.2 50V
R8 430
R20 560
IC2
CX-134A
PB AMP/DROP OUT COMPENSATION
CHANNEL BALANCE
DAMPING A
DAMPING B
AMP
LIMITTER PRE AMP
MAIN LIMITTER
DOC
SCHMIDT TRIGGER
PB Y RF OUT
R29 8.2 (1/8W)
R49 3.9k
RV6 4.7k
D1
R48 10k
C22 10 16V
D1 1SS148
CN4 (WHT)
1 PB C RF SIGNAL OUT(X) WHT
2 PB C RF SIGNAL OUT(Y) WHT
3 PCM/MODE CONTROL WHT
4 PB Y RF SIGNAL OUT(X) WHT
5 PB Y RF SIGNAL OUT(Y) RED
6 RF SWITCHING PULSE —
7 PB 12V IN WHT
8 DOC RF SIGNAL OUT(X) WHT
9 DOC RF SIGNAL OUT(Y) BLK
10 CTL SIGNAL WHT
Q3 2SC2785 HYSTERISYS
Q6 2SC2785 SW
Q1 2SA1175 SW
Q2 2SC2785 REC B+ POWER SW
IC1 CX-862 HEAD AMP
PB AMP
SWITCH
REC AMP
REC GND
PB GND
TP1
TP2
TP3
TP4
Q4 2SC2785 REC Y-FM AMP
Q5 2SC2603 9V REC
Y REC CURRENT
CN2 (WHT)
1 REC Y RF SIGNAL IN(X) WHT
2 REC Y RF SIGNAL IN(Y) WHT
3 REC·PAUSE 12V —
4 SWITCHED 12V WHT
5 REC C RF SIGNAL IN(X) WHT
6 REC C RF SIGNAL IN(Y) RED
CN5 (WHT)
1 GND
2 REC CURRENT
3 REC CURRENT
CN1 (BLK)
1 VIDEO HEAD A(X) WHT
2 VIDEO HEAD A(Y) RED
3 VIDEO HEAD (G) BLK
4 VIDEO HEAD B(X) WHT
5 VIDEO HEAD B(Y) RED
6 VIDEO HEAD (G) BLK
VIDEO HEAD (A)
VIDEO HEAD (B)
C37 20p
C38 24p
NO MARK : REC/PB MODE
( ) : PB MODE
[ ] : REC MODE
(( )) : JOG MODE
※ : CAN NOT BE MEASURED

NOTES:

- Connection display



(2) Indicates the connection to 1 in Fig. 3.

(1) Indicates No.1 in Fig. 1.

Fig. 1 . . . . . . Video block
Fig. 2 . . . . . . Servo/system control block
Fig. 3 . . . . . . Tuner/audio block
Fig. 4 . . . . . . Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- ━ : B + bus.
  (▭ : Unswitched)
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

① : The number indicates No. of a waveform diagram.
For the waveform diagram, refer to pages 73 and 74.
＊ : Not measurable

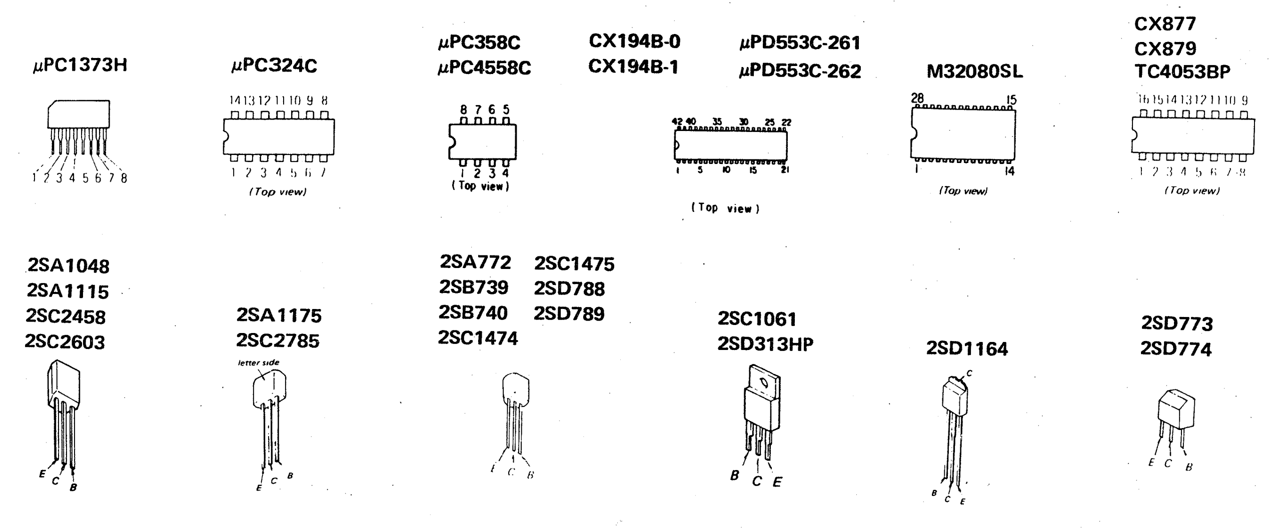
The voltage value is measured using a digital tester (10MΩ/V).

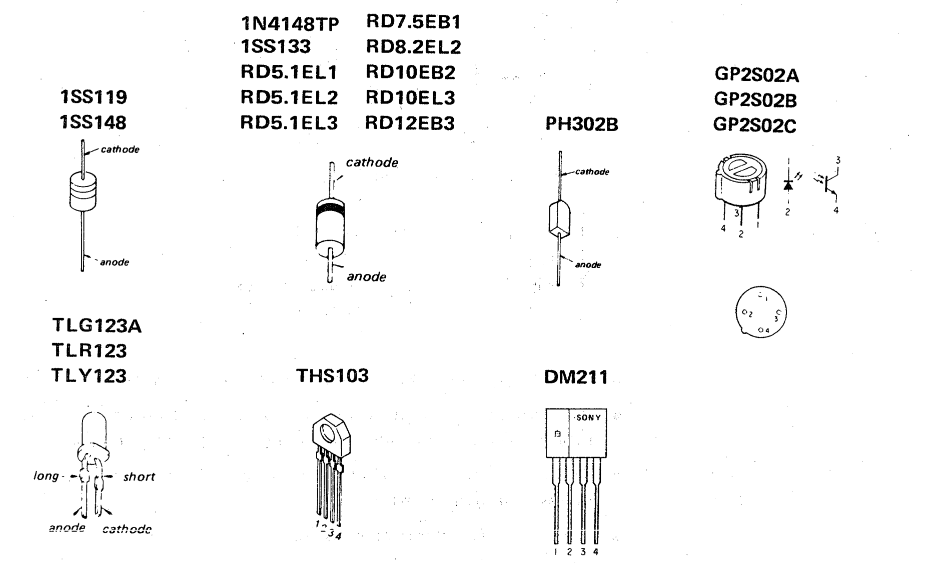
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

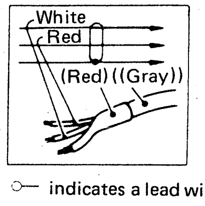
FORMER

SS-13 GM-2 (SERVO/SYSTEM CONTROL) FS-19 (CASSETTE CONTROL SWITCH) FS-20 (REC, TV/VTR SELECT SWITCH) FS-21 (TRACKING VOLUME POWER SWITCH) PS-25 (REEL MOTOR DRIVE) REEL MOTOR (REEL MOTOR)


μPC1373H
1 2 3 4 5 6 7 8
μPC324C
14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)
μPC358C
μPC4558C
8 7 6 5
1 2 3 4
(Top view)
CX194B-0
CX194B-1
μPD553C-261
μPD553C-262
42 40 35 30 25 22
1 5 10 15 21
(Top view)
M32080SL
28 15
1 14
(Top view)
CX877
CX879
TC4053BP
16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)
2SA1048
2SA1115
2SC2458
2SC2603
E C B
2SA1175
2SC2785
letter side
E C B
2SA772 2SC1475
2SB739 2SD788
2SB740 2SD789
2SC1474
E C B
2SC1061
2SD313HP
B C E
2SD1164
C
B C E
2SD773
2SD774
E C B

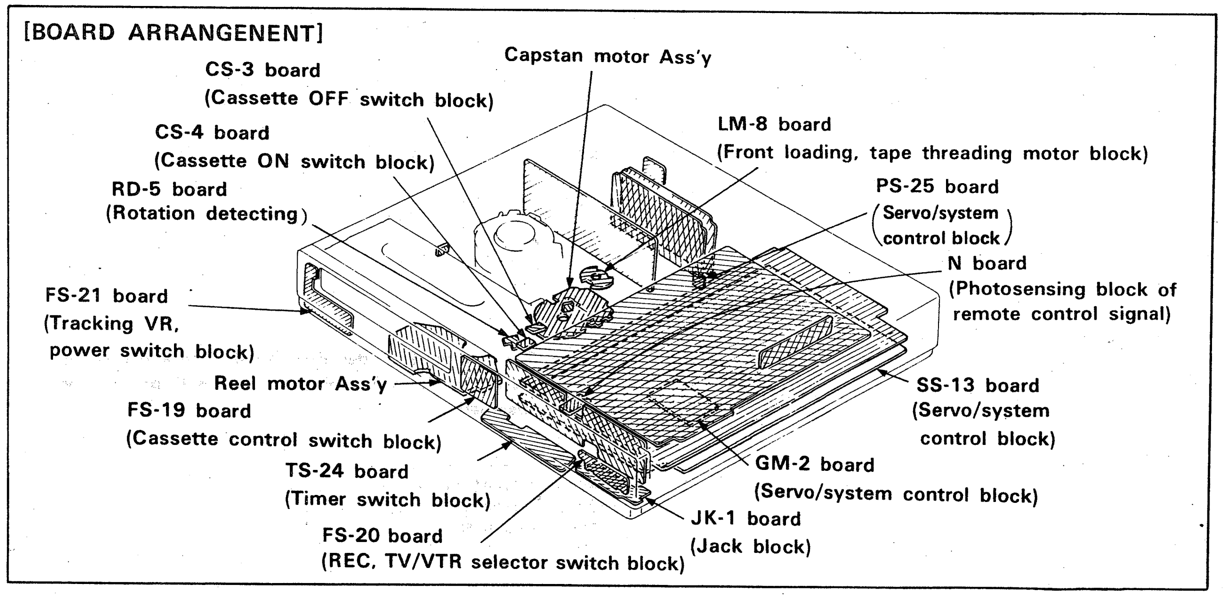

1SS119
1SS148
cathode
anode
1N4148TP RD7.5EB1
1SS133 RD8.2EL2
RD5.1EL1 RD10EB2
RD5.1EL2 RD10EL3
RD5.1EL3 RD12EB3
cathode
anode
PH302B
cathode
anode
GP2S02A
GP2S02B
GP2S02C
1 2 3 4
TLG123A
TLR123
TLY123
long
short
anode
cathode
THS103
1 2 3 4
DM211
SONY
1 2 3 4

- Color code of sleeving over the end of the jacket.


White
Red
(Red) ((Gray))

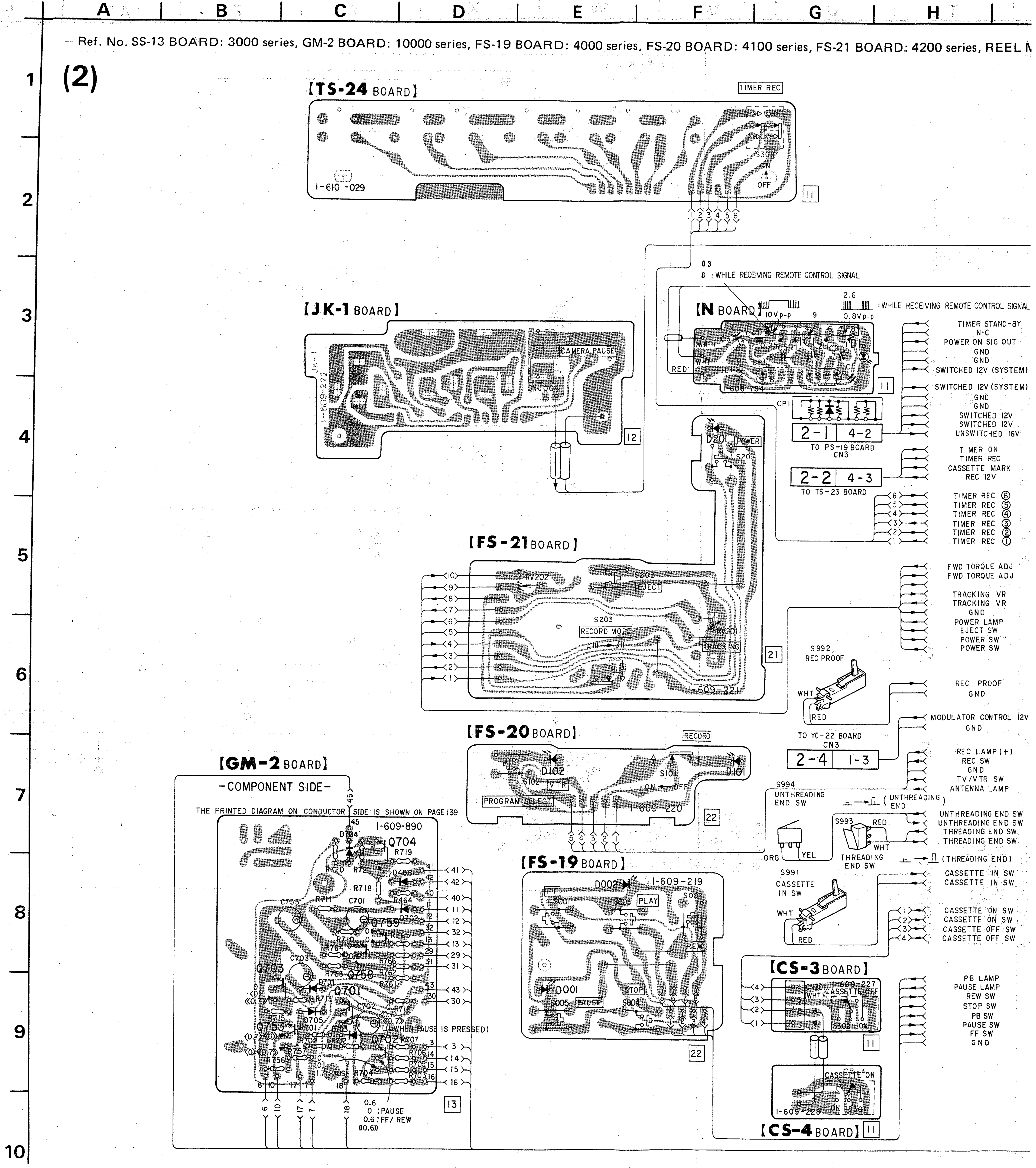
- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ⊗—⊗ Through hole
- ▨ Soldering side
- ▨ Component side
- ▨ B + pattern

[BOARD ARRANGENENT]


CS-3 board
(Cassette OFF switch block)
Capstan motor Ass'y
CS-4 board
(Cassette ON switch block)
LM-8 board
(Front loading, tape threading motor block)
RD-5 board
(Rotation detecting)
PS-25 board
(Servo/system control block)
N board
(Photosensing block of remote control signal)
FS-21 board
(Tracking VR, power switch block)
Reel motor Ass'y
SS-13 board
(Servo/system control block)
FS-19 board
(Cassette control switch block)
TS-24 board
(Timer switch block)
GM-2 board
(Servo/system control block)
FS-20 board
(REC, TV/VTR selector switch block)
JK-1 board
(Jack block)

– Ref. No. SS-13 BOARD: 3000 series, GM-2 BOARD: 10000 series, FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL

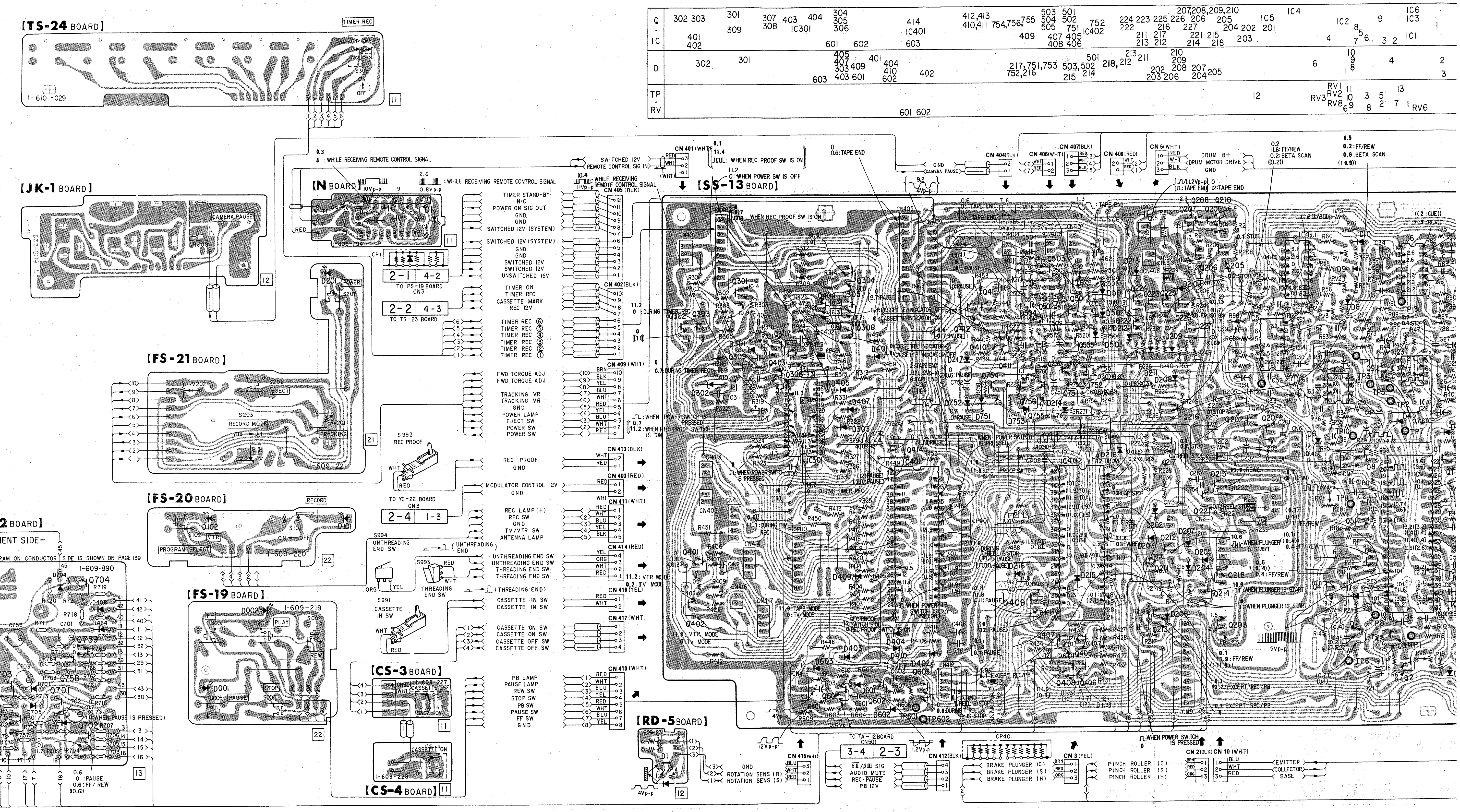
(2)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
[TS-24 BOARD]
TIMER REC
S308
ON
OFF
1-610-029
11
1 2 3 4 5 6
0.3
8 : WHILE RECEIVING REMOTE CONTROL SIGNAL
[JK-1 BOARD]
CAMERA PAUSE
CN3004
1-609-222
12
[N BOARD]
10Vp-p
9
2.6
0.8Vp-p
: WHILE RECEIVING REMOTE CONTROL SIGNAL
(WHT)
WHT
RED
C6
C4
0.25
C5
IC1
2.1
C2
D1
C3
C1
CP1
L1
1-606-794
11
CP1
2-1 4-2
TO PS-19 BOARD
CN3
2-2 4-3
TO TS-23 BOARD
TIMER STAND-BY
N·C
POWER ON SIG OUT
GND
GND
SWITCHED 12V (SYSTEM)
SWITCHED 12V (SYSTEM)
GND
GND
SWITCHED 12V
SWITCHED 12V
UNSWITCHED 16V
TIMER ON
TIMER REC
CASSETTE MARK
REC 12V
TIMER REC ⑥
TIMER REC ⑤
TIMER REC ④
TIMER REC ③
TIMER REC ②
TIMER REC ①
D201
POWER
S201
[FS-21 BOARD]
RV202
S202
EJECT
S203
RECORD MODE
RV201
TRACKING
1-609-221
21
FWD TORQUE ADJ
FWD TORQUE ADJ
TRACKING VR
TRACKING VR
GND
POWER LAMP
EJECT SW
POWER SW
POWER SW
S992
REC PROOF
WHT
RED
REC PROOF
GND
MODULATOR CONTROL 12V
GND
[FS-20 BOARD]
RECORD
D102
S102
VTR
PROGRAM SELECT
S101
ON ← OFF
D101
1-609-220
22
TO YC-22 BOARD
CN3
2-4 1-3
REC LAMP (+)
REC SW
GND
TV/VTR SW
ANTENNA LAMP
S994
UNTHREADING
END SW
(UNTHREADING END)
UNTHREADING END SW
UNTHREADING END SW
THREADING END SW
THREADING END SW
S993
RED
WHT
ORG
YEL
THREADING
END SW
(THREADING END)
S991
CASSETTE
IN SW
WHT
RED
CASSETTE IN SW
CASSETTE IN SW
CASSETTE ON SW
CASSETTE ON SW
CASSETTE OFF SW
CASSETTE OFF SW
[GM-2 BOARD]
-COMPONENT SIDE-
THE PRINTED DIAGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 139
45
1-609-890
D704
Q704
R719
R720
R721
0.7
D408
R718
R464
C753
R711
C701
Q759
D702
R710
R765
R764
R766
C703
Q703
R763
Q758
R762
R761
D701
Q701
R713
C702
R716
R715
D705
Q753
R701
D703
(⎍ WHEN PAUSE IS PRESSED)
R702
R712
Q702
R707
R757
R756
R706
R705
R704
R703
11.7: PAUSE
0.6
0 : PAUSE
0.6 : FF/ REW
((0.6))
13
[FS-19 BOARD]
D002
1-609-219
FF
S001
S003
PLAY
S002
REW
D001
STOP
S005
PAUSE
S004
22
[CS-3 BOARD]
CN301
(WHT)
1-609-227
CASSETTE OFF
S302
ON
11
PB LAMP
PAUSE LAMP
REW SW
STOP SW
PB SW
PAUSE SW
FF SW
GND
CASSETTE ON
1-609-228
ON
S301
[CS-4 BOARD]
11

CKING VOLUME POWER SWITCH) **PS-25** (REEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR) **CAPSTAN MOTOR** (CAPSTAN MOTOR) **TS-24** (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (RO

C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S

ies, GM-2 BOARD: 10000 series, FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL MOTOR BOARD: 5000 series, CAPSTAN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200


[TS-24 BOARD]
TIMER REC
1-610-029
[JK-1 BOARD]
CAMERA PAUSE
[N BOARD]
[FS-21 BOARD]
EJECT
RECORD MODE
TRACKING
1-609-221
[FS-20 BOARD]
RECORD
VTR
PROGRAM SELECT
1-609-220
[FS-19 BOARD]
1-609-219
PLAY
REW
PAUSE
STOP
[CS-3 BOARD]
1-609-227
CASSETTE OFF
[CS-4 BOARD]
CASSETTE ON
1-609-228
[RD-5 BOARD]
[SS-13 BOARD]
S992 REC PROOF
S994 UNTHREADING END SW
S993 THREADING END SW
S991 CASSETTE IN SW
TO PS-19 BOARD CN3
TO TS-23 BOARD
TO YC-22 BOARD CN3
TO TA-12 BOARD CN501
TIMER STAND-BY
POWER ON SIG OUT
SWITCHED 12V (SYSTEM)
UNSWITCHED 16V
TIMER ON
TIMER REC
CASSETTE MARK
REC 12V
FWD TORQUE ADJ
TRACKING VR
POWER LAMP
EJECT SW
POWER SW
REC PROOF
MODULATOR CONTROL 12V
REC LAMP (+)
REC SW
TV/VTR SW
ANTENNA LAMP
UNTHREADING END SW
THREADING END SW
CASSETTE IN SW
CASSETTE ON SW
CASSETTE OFF SW
PB LAMP
PAUSE LAMP
REW SW
STOP SW
PB SW
PAUSE SW
FF SW
ROTATION SENS (R)
ROTATION SENS (S)
AUDIO MUTE
REC·PAUSE
PB 12V
BRAKE PLUNGER (C)
BRAKE PLUNGER (S)
BRAKE PLUNGER (H)
PINCH ROLLER (C)
PINCH ROLLER (S)
PINCH ROLLER (H)
EMITTER
COLLECTOR
BASE
DRUM B+
DRUM MOTOR DRIVE
0.2: BETA SCAN
0.9: BETA SCAN
WHEN REC PROOF SW IS ON
WHEN POWER SWITCH IS PRESSED
WHEN PLUNGER IS START
TAPE END
FF/REW

FORMER

SERVO, SYSTEM CONTROL   SERVO, SYSTEM CONTROL

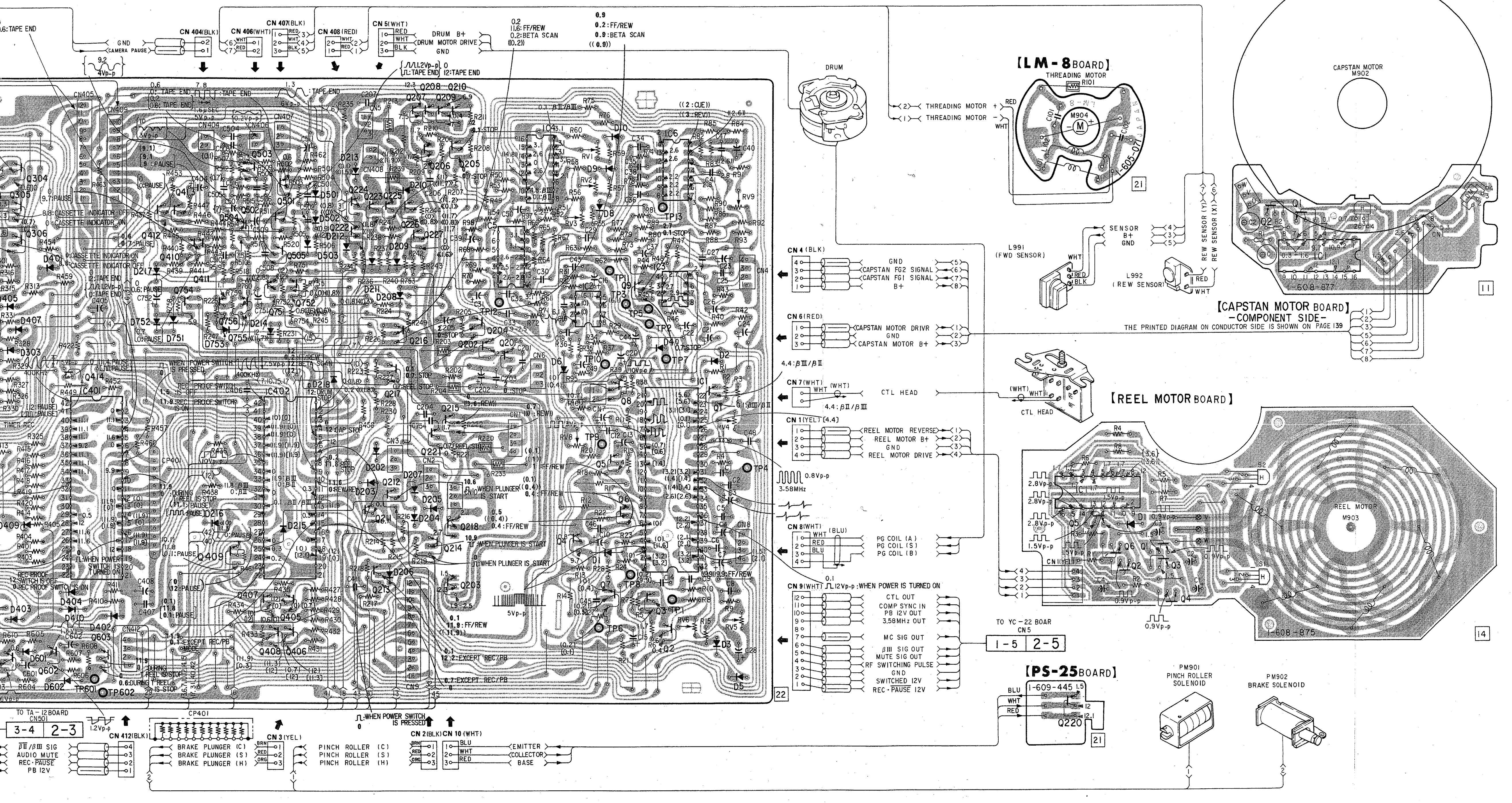
FORMER

AN MOTOR) **TS-24** (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (ROTATION DETECTOR) **CS-3** (CASSETTE ON SWITCH) **CS-4** (CASSETTE OFF SWITCH) **N** (REMOCON SIGNAL SENSOR)

L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A1

0 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200 series, CS-3·CS-4 BOARD: 9300 series, N BOARD: 9600 series –

L	M	N	O	P	Q	R	S
304 305 306 01 602	414 IC401 603	412,413 410,411 754,756,755 409	503 501 504 502 505 751 407 405 408 406 752 IC402 224 223 222	225 226 206 216 227 211 217 221 215 213 212 214 218 207,208,209,210 205 204	202 201 203 IC5 IC4	IC2 4 8 5 7 6 9 3 2	IC6 IC3 IC1 1
405 407 409 303 403 601	401 404 410 602 402	217,751,753 752,216	503,502 215 501 214 218, 212	213 211 202 203 206 210 209 208 207 204 205	6	10 9 8 1 4	2 3 5
	601 602				12 RV3	RV1 RV2 RV8 11 10 6 9 3 5 8 2 7 13	1 RV6 RV9 RV4 4 RV5



0.6:TAPE END
GND
CAMERA PAUSE
9.2
4Vp-p
CN 404(BLK)
CN 406(WHT)
CN 407(BLK)
RED
WHT
BLK
CN 408 (RED)
CN 5(WHT)
DRUM B+
DRUM MOTOR DRIVE
GND
0.2
11.6: FF/REW
0.2:BETA SCAN
((0.2))
0.9
0.2 : FF/REW
0.9 : BETA SCAN
((0.9))
1.2Vp-p 0
TAPE END 12:TAPE END
DRUM
THREADING MOTOR +
THREADING MOTOR –
【LM-8 BOARD】
THREADING MOTOR
R101
M904
1-605-07
21
CAPSTAN MOTOR
M902
SENSOR
B+
GND
L991
(FWD SENSOR)
L992
(REW SENSOR)
REW SENSOR (Y)
REW SENSOR (X)
WHT
RED
BLK
【CAPSTAN MOTOR BOARD】
-COMPONENT SIDE-
THE PRINTED DIAGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 139
1-608-877
11
CN 4 (BLK)
GND
CAPSTAN FG2 SIGNAL
CAPSTAN FG1 SIGNAL
B+
CN 6(RED)
CAPSTAN MOTOR DRIVR
GND
CAPSTAN MOTOR B+
4.4: βIII/βII
CN 7(WHT)
(WHT)
CTL HEAD
4.4: βII/βIII
CTL HEAD
CN 1(YEL) (4.4)
REEL MOTOR REVERSE
REEL MOTOR B+
GND
REEL MOTOR DRIVE
【REEL MOTOR BOARD】
REEL MOTOR
M903
1-608-875
14
0.8Vp-p
3.58MHz
2.8Vp-p
1.5Vp-p
0.9Vp-p
CN 8(WHT)
(BLU)
PG COIL (A)
PG COIL (S)
PG COIL (B)
CN 9(WHT)
0.1
12Vp-p : WHEN POWER IS TURNED ON
CTL OUT
COMP SYNC IN
PB 12V OUT
3.58MHz OUT
MC SIG OUT
βIII SIG OUT
MUTE SIG OUT
RF SWITCHING PULSE
GND
SWITCHED 12V
REC·PAUSE 12V
TO YC-22 BOAR
CN5
1-5
2-5
22
【PS-25 BOARD】
1-609-445
BLU
WHT
RED
Q220
21
PM901
PINCH ROLLER
SOLENOID
PM902
BRAKE SOLENOID
TO TA-12 BOARD
CN501
3-4
2-3
1.2Vp-p
βII/βIII SIG
AUDIO MUTE
REC·PAUSE
PB 12V
CN 412(BLK)
CP401
BRAKE PLUNGER (C)
BRAKE PLUNGER (S)
BRAKE PLUNGER (H)
CN 3 (YEL)
BRN
ORG
PINCH ROLLER (C)
PINCH ROLLER (S)
PINCH ROLLER (H)
WHEN POWER SWITCH IS PRESSED
CN 2(BLK)
CN 10 (WHT)
EMITTER
COLLECTOR
BASE

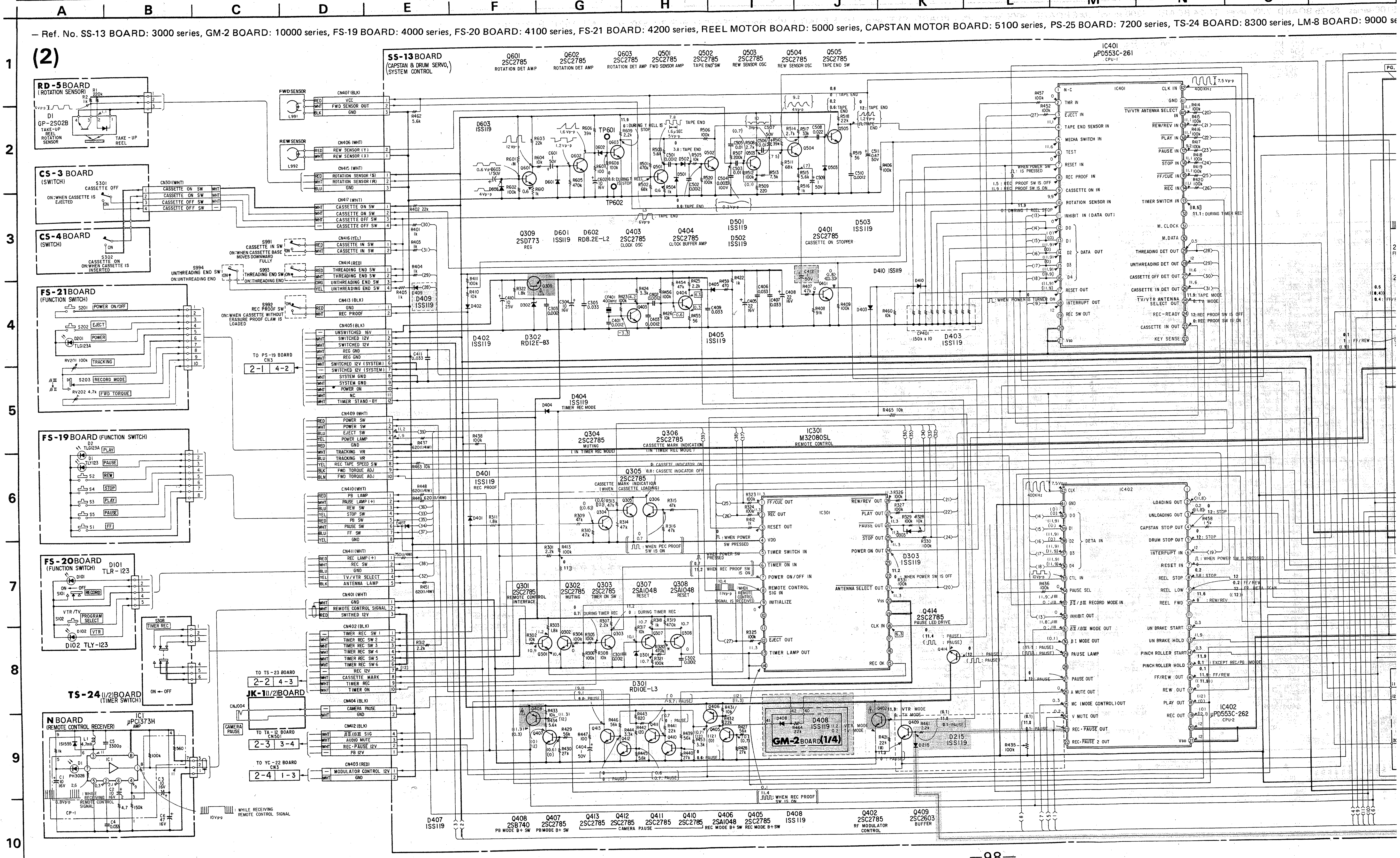
FORMER

SERVO, SYSTEM CONTROL SERVO, SYSTEM CONTROL

FORMER

SS-13 **GM-2** (SERVO/SYSTEM CONTROL) **FS-19** (CASSETTE CONTROL SWITCH) **FS-20** (REC, TV/VTR SELECT SWITCH) **FS-21** (TRACKING VOLUME POWER SWITCH) **PS-25** (REEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR)

– Ref. No. SS-13 BOARD: 3000 series, GM-2 BOARD: 10000 series, FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL MOTOR BOARD: 5000 series, CAPSTAN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 se



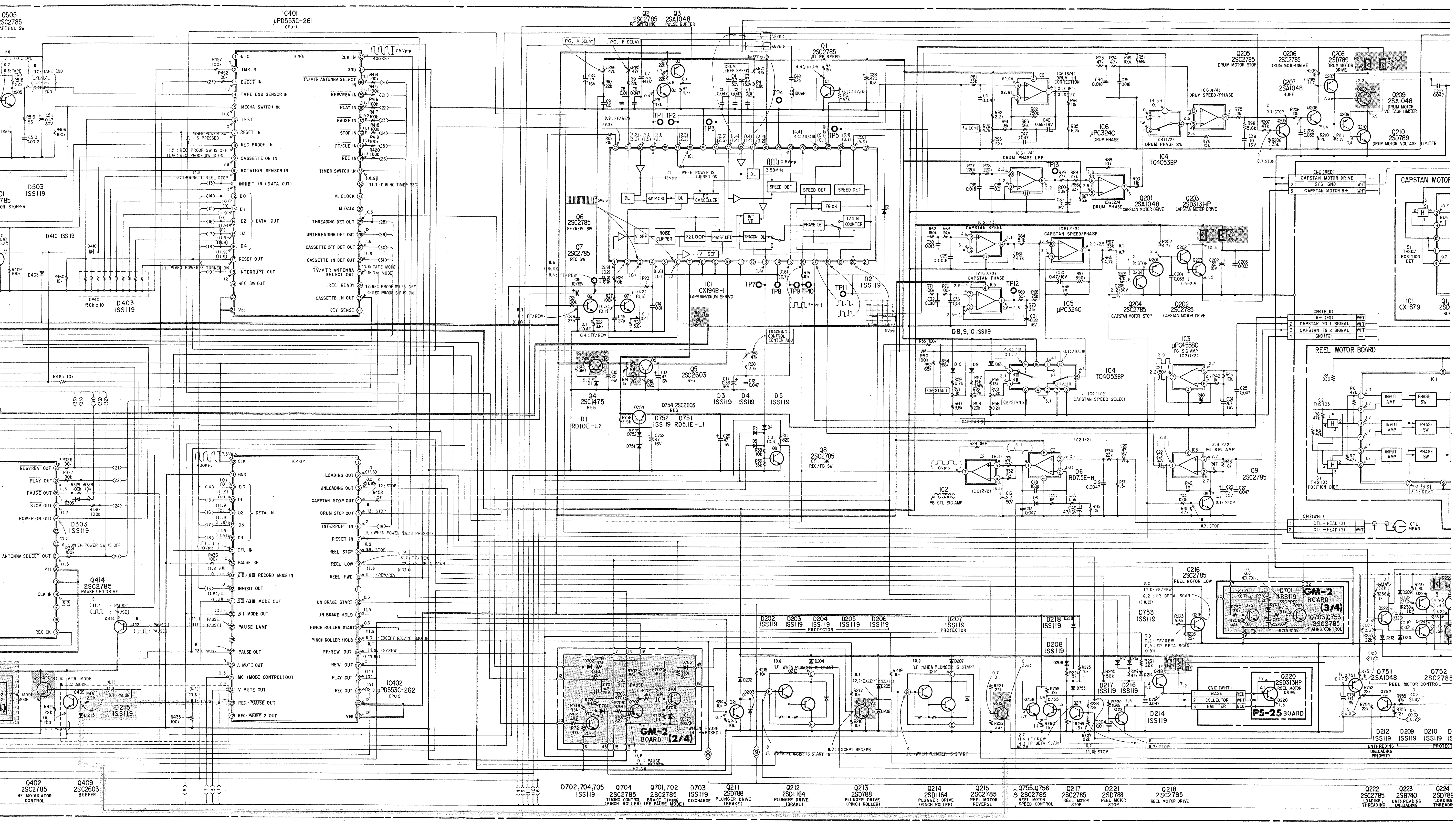
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
(2)
RD-5 BOARD (ROTATION SENSOR)
D1 GP-2S02B
TAKE-UP REEL ROTATION SENSOR
CS-3 BOARD (SWITCH)
S301 CASSETTE OFF
CS-4 BOARD (SWITCH)
S302 CASSETTE ON
FS-21 BOARD (FUNCTION SWITCH)
S201 POWER ON/OFF
S202 EJECT
D201 POWER TLG123A
RV201 100k TRACKING
S203 RECORD MODE
RV202 4.7k FWD TORQUE
FS-19 BOARD (FUNCTION SWITCH)
PLAY
PAUSE
REW
STOP
FF
FS-20 BOARD (FUNCTION SWITCH)
D101 TLR-123
RECORD
PROGRAM SELECT
VTR
D102 TLY-123
S308 TIMER REC
TS-24 (1/2) BOARD (TIMER SWITCH)
N BOARD (REMOTE CONTROL RECEIVER)
IC1 μPC1373H AMP
PH3028
WHILE RECEIVING REMOTE CONTROL SIGNAL
FWD SENSOR
REW SENSOR
S991 CASSETTE IN SW
S994 UNTHREADING END SW
S993 THREADING END SW
S992 REC PROOF SW
TO PS-19 BOARD CN3
2-1 4-2
TO TS-23 BOARD
2-2 4-3
JK-1 (1/2) BOARD
CAMERA PAUSE
TO TA-12 BOARD CN501
2-3 3-4
TO YC-22 BOARD CN3
2-4 1-3
SS-13 BOARD (CAPSTAN & DRUM SERVO, SYSTEM CONTROL)
Q601 2SC2785 ROTATION DET AMP
Q602 2SC2785 ROTATION DET AMP
Q603 2SC2785 ROTATION DET AMP
Q501 2SC2785 FWD SENSOR AMP
Q502 2SC2785 TAPE END SW
Q503 2SC2785 REW SENSOR OSC
Q504 2SC2785 REW SENSOR OSC
Q505 2SC2785 TAPE END SW
Q309 2SD773 REG
D601 1SS119
D602 RD8.2E-L2
Q403 2SC2785 CLOCK OSC
Q404 2SC2785 CLOCK BUFFER AMP
D501 1SS119
D502 1SS119
Q401 2SC2785 CASSETTE ON STOPPER
D503 1SS119
D410 1SS119
D402 1SS119
D302 RD12E-B3
D405 1SS119
D403 1SS119
D404 1SS119 TIMER REC MODE
D409 1SS119
CP401 150k x 10
IC401 μPD553C-261 CPU-1
IC301 M32080SL REMOTE CONTROL
Q304 2SC2785 MUTING
Q306 2SC2785 CASSETTE MARK INDICATION
Q305 2SC2785 CASSETTE MARK INDICATION
D401 1SS119 REC PROOF
D303 1SS119
Q414 2SC2785 PAUSE LED DRIVE
Q301 2SC2785 REMOTE CONTROL INTERFACE
Q302 2SC2785 MUTING
Q303 2SC2785 TIMER ON SW
Q307 2SA1048 RESET
Q308 2SA1048 RESET
D301 RD10E-L3
IC402 μPD553C-262 CPU-2
GM-2 BOARD (1/4)
D408 1SS119
D215 1SS119
D407 1SS119
Q408 2SB740 PB MODE B+ SW
Q407 2SC2785 PB MODE B+ SW
Q413 2SC2785
Q412 2SC2785 CAMERA PAUSE
Q411 2SC2785
Q410 2SC2785
Q406 2SA1048 REC MODE B+ SW
Q405 2SC2785 REC MODE B+ SW
D408 1SS119
Q402 2SC2785 RF MODULATOR CONTROL
Q409 2SC2603 BUFFER

STEM CONTROL	FORMER	FORMER	SERVO, SYSTEM CONTROL	SERVO, SYSTEM CONTROL

ACKING VOLUME POWER SWITCH) **PS-25** (REEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR) **CAPSTAN MOTOR** (CAPSTAN MOTOR) **TS-24** (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5**

J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

00 series, CAPSTAN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200 series. CS-3·CS-4 BOARD: 9300 series. N BOARD: 9600 series –



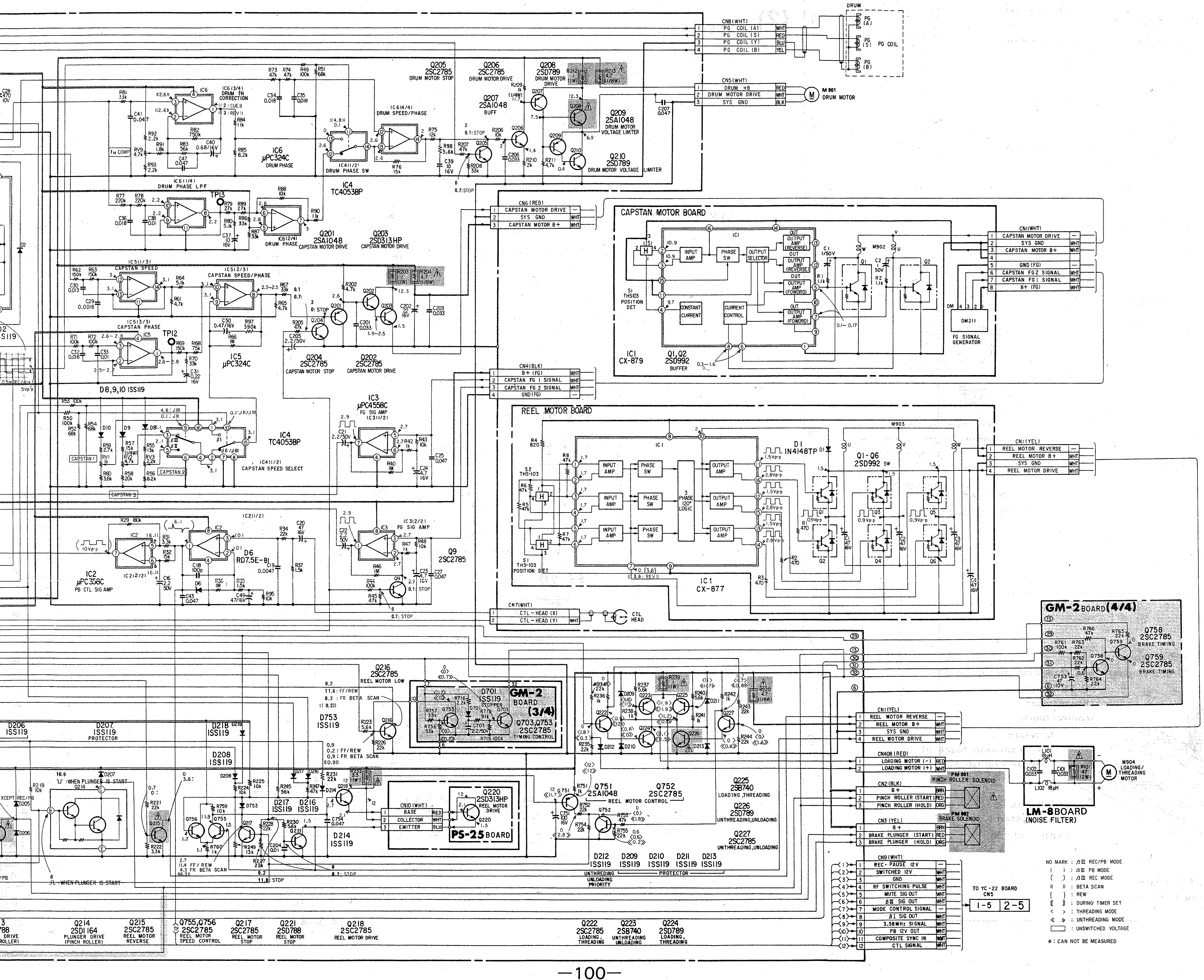
IC401
μPD553C-261
CPU-I
IC402
μPD553C-262
CPU-2
IC1
CX194B-I
CAPSTAN/DRUM SERVO
IC2
μPC358C
PB CTL SIG AMP
IC3
μPC4558C
FG SIG AMP
IC4
TC4053BP
CAPSTAN SPEED SELECT
IC5
μPC324C
IC6
μPC324C
DRUM PHASE
Q1
2SC2785
Q2
2SC2785
RF SWITCHING
Q3
2SA1048
PULSE BUFFER
Q4
2SC1475
REG
Q5
2SC2603
Q6
2SC2785
FF/REW SW
Q7
2SC2785
REC SW
Q8
2SC2785
CTL SIG REC/PB SW
Q9
2SC2785
Q201
2SA1048
CAPSTAN MOTOR DRIVE
Q203
2SD313HP
CAPSTAN MOTOR DRIVE
Q204
2SC2785
CAPSTAN MOTOR STOP
Q202
2SC2785
CAPSTAN MOTOR DRIVE
Q205
2SC2785
DRUM MOTOR STOP
Q206
2SC2785
DRUM MOTOR DRIVE
Q207
2SA1048
BUFF
Q208
2SD789
DRUM MOTOR DRIVE
Q209
2SA1048
DRUM MOTOR VOLTAGE LIMITER
Q210
2SD789
DRUM MOTOR VOLTAGE LIMITER
Q216
2SC2785
REEL MOTOR LOW
Q220
2SD313HP
REEL MOTOR DRIVE
Q751
2SA1048
Q752
2SC2785
REEL MOTOR CONTROL
Q754 2SC2603
REG
Q414
2SC2785
PAUSE LED DRIVE
Q402
2SC2785
RF MODULATOR CONTROL
Q409
2SC2603
BUFFER
Q505
2SC2785
TAPE END SW
D1
RD10E-L2
D2
ISS119
D3 ISS119
D4 ISS119
D5 ISS119
D6
RD7.5E-B1
D8,9,10 ISS119
D303
ISS119
D403
ISS119
D410 ISS119
D503
ISS119
D215
ISS119
D752 ISS119
D751 RD5.1E-L1
D753
ISS119
D202 ISS119
D203 ISS119
D204 ISS119
D205 ISS119
D206 ISS119
PROTECTOR
D207
ISS119
PROTECTOR
D218 ISS119
D208 ISS119
D217 ISS119
D216 ISS119
D214
ISS119
D212 ISS119
D209 ISS119
D210 ISS119
UNTHREADING UNLOADING PRIORITY
PROTECT
D701 ISS119
STOPPER
GM-2 BOARD (3/4)
Q703,Q753
2SC2785
TIMING CONTROL
GM-2 BOARD (2/4)
PS-25 BOARD
REEL MOTOR BOARD
CAPSTAN MOTOR
IC1
CX-879
S1 THS103 POSITION DET
CN4(BLK)
B+ (FG)
CAPSTAN FG 1 SIGNAL
CAPSTAN FG 2 SIGNAL
GND (FG)
CN6 (RED)
CAPSTAN MOTOR DRIVE
SYS GND
CAPSTAN MOTOR B+
CN7(WHT)
CTL-HEAD (X)
CTL-HEAD (Y)
CTL HEAD
CN10 (WHT)
BASE
COLLECTOR
EMITTER
TRACKING CONTROL CENTER ADJ
TP1 TP2 TP3 TP4 TP5 TP7 TP8 TP9 TP10 TP11 TP12 TP13
SPEED DET
FG X 4
PHASE DET
1/4 N COUNTER
INT VD
TRACON DL
P2 LOOP
NOISE CLIPPER
V SEP
SW P OSC
PG CANCELLER
CAPSTAN SPEED
CAPSTAN PHASE
CAPSTAN SPEED/PHASE
DRUM PHASE LPF
DRUM FH CORRECTION
DRUM SPEED/PHASE
DRUM PHASE SW
D702,704,705
ISS119
Q704
2SC2785
TIMING CONTROL (PINCH ROLLER)
Q701,702
2SC2785
BRAKE TIMING (PB PAUSE MODE)
D703
ISS119
DISCHARGE
Q211
2SD788
PLUNGER DRIVE (BRAKE)
Q212
2SD1164
PLUNGER DRIVE (BRAKE)
Q213
2SD788
PLUNGER DRIVE (PINCH ROLLER)
Q214
2SD1164
PLUNGER DRIVE (PINCH ROLLER)
Q215
2SC2785
REEL MOTOR REVERSE
Q755,Q756
2SC2785
REEL MOTOR SPEED CONTROL
Q217
2SC2785
REEL MOTOR STOP
Q221
2SD788
REEL MOTOR STOP
Q218
2SC2785
REEL MOTOR DRIVE
Q222
2SC2785
LOADING THREADING
Q223
2SB740
UNTHREADING UNLOADING
Q224
2SD789
LOADING THREADING

YSTEM CONTROL | SERVO, SYSTEM CONTROL | FORMER | FORMER | SERVO, SYSTEM CONTROL

TOR) | **TS-24** (TIMER SWITCH) | **LM-8** (NOISE FILTER) | **JK-1** (JACK) | **RD-5** (ROTATION DETECTOR) | **CS-3** (CASSETTE ON SWITCH) | **CS-4** (CASSETTE OFF SWITCH) | **N** (REMOCON SIGNAL SENSOR)

T | U | V | W | X | Y | Z | A1 | B1 | C1 | D1 | E1 | F1

CS-4 BOARD: 9300 series, N BOARD: 9600 series —



DRUM
PG COIL
CN8(WHT)
CN5(WHT)
M901 DRUM MOTOR
Q205 2SC2785 DRUM MOTOR STOP
Q206 2SC2785 DRUM MOTOR DRIVE
Q208 2SD789 DRUM MOTOR DRIVE
Q207 2SA1048 BUFF
Q209 2SA1048 DRUM MOTOR VOLTAGE LIMITER
Q210 2SD789 DRUM MOTOR VOLTAGE LIMITER
IC6 µPC324C DRUM PHASE
IC4 TC4053BP
IC6(1/4) DRUM PHASE LPF
IC6(3/4) DRUM FM CORRECTION
IC6(4/4) DRUM SPEED/PHASE
IC4(1/2) DRUM PHASE SW
TP13
Q201 2SA1048 CAPSTAN MOTOR DRIVE
Q203 2SD313HP CAPSTAN MOTOR DRIVE
IC5(1/3) CAPSTAN SPEED
IC5(2/3) CAPSTAN SPEED/PHASE
IC5(3/3) CAPSTAN PHASE
TP12
IC5 µPC324C
Q204 2SC2785 CAPSTAN MOTOR STOP
Q202 2SC2785 CAPSTAN MOTOR DRIVE
D8,9,10 1SS119
IC4 TC4053BP
IC4(1/2) CAPSTAN SPEED SELECT
IC3 µPC4558C FG SIG AMP
IC3(2/2) FG SIG AMP
Q9 2SC2785
IC2 µPC358C PB CTL SIG AMP
D6 RD7.5E-B1
CN6(RED)
CN4(BLK)
CN7(WHT)
CTL HEAD
CAPSTAN MOTOR BOARD
IC1 CX-879
Q1,Q2 2SD992 BUFFER
S1 THS103 POSITION DET
M902
DM211 FG SIGNAL GENERATOR
CN1(WHT)
REEL MOTOR BOARD
D1 1N4148TP
Q1-Q6 2SD992
IC1 CX-877
M903
CN1(YEL)
GM-2 BOARD(4/4)
Q758 2SC2785 BRAKE TIMING
Q759 2SC2785 BRAKE TIMING
Q216 2SC2785 REEL MOTOR LOW
D701 1SS119 STOPPER
GM-2 BOARD (3/4)
Q703,Q753 2SC2785 TIMING CONTROL
D753 1SS119
D206 1SS119
D207 1SS119 PROTECTOR
D218 1SS119
D208 1SS119
D217 1SS119
D216 1SS119
D214 1SS119
Q220 2SD313HP REEL MOTOR DRIVE
PS-25 BOARD
CN10(WHT)
Q751 2SA1048
Q752 2SC2785 REEL MOTOR CONTROL
Q225 2SB740 LOADING,THREADING
Q226 2SD789 UNTHREADING,UNLOADING
Q227 2SC2785 UNTHREADING,UNLOADING
D212 D209 D210 D211 D213 1SS119
UNTHREADING UNLOADING PRIORITY
PROTECTOR
CN1(YEL)
CN408(RED)
CN2(BLK)
CN3(YEL)
CN9(WHT)
PM901 PINCH ROLLER SOLENOID
PM902 BRAKE SOLENOID
LM-8 BOARD (NOISE FILTER)
M904 LOADING/THREADING MOTOR
TO YC-22 BOARD CN5
1-5 | 2-5
Q214 2SD1164 PLUNGER DRIVE (PINCH ROLLER)
Q215 2SC2785 REEL MOTOR REVERSE
Q755,Q756 2SC2785 REEL MOTOR SPEED CONTROL
Q217 2SC2785 REEL MOTOR STOP
Q221 2SD788 REEL MOTOR STOP
Q218 2SC2785 REEL MOTOR DRIVE
Q222 2SC2785 LOADING, THREADING
Q223 2SB740 UNTHREADING UNLOADING
Q224 2SD789 LOADING, THREADING
NO MARK : ∫∫ REC/PB MODE
( ) : PB MODE
[ ] : REC MODE
: BETA SCAN
: REW
: DURING TIMER SET
: THREADING MODE
《 》 : UNTHREADING MODE
: UNSWITCHED VOLTAGE
*: CAN NOT BE MEASURED

NOTES:

[ ] ▨ :When a former CPU is put to use.

- Connection display

1-1 | 3-1

(2) Indicates the connection to 1 in Fig. 3.

(1) Indicates No.1 in Fig. 1.

Fig. 1 . . . . . . Video block
Fig. 2 . . . . . . Servo/system control block
Fig. 3 . . . . . . Tuner/audio block
Fig. 4 . . . . . . Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in µF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : B + bus.
  (▭ : Unswitched)
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

The voltage value is measured using a digital tester (10MΩ/V).

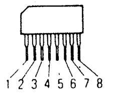
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

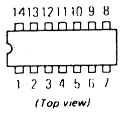
NEW

SS-13 (SERVO/SYSTEM CONTROL) **FS-19** (CASSETTE CONTROL SWITCH) **FS-20** (REC, TV/VTR SELECT SWITCH)

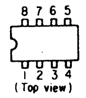
µPC1373H



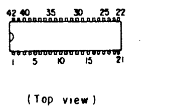
µPC324C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

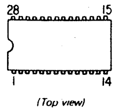
µPC358C
µPC4558C


8 7 6 5
1 2 3 4
(Top view)

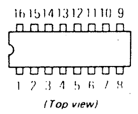
CX194B-0
CX194B-1
µPD553C-276
µPD553C-287


42 40 35 30 25 22
1 5 10 15 21
(Top view)

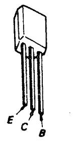
M32080SL


28
15
1
14
(Top view)

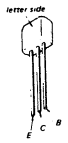
CX877
CX879
TC4053BP


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

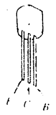
2SA1048
2SA1115
2SC2458
2SC2603



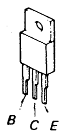
2SA1175
2SC2785


letter side
E
C
B

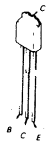
2SA772 2SC1475
2SB739 2SD788
2SB740 2SD789
2SC1474



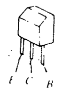
2SC1061
2SD313HP



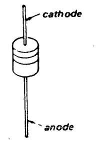
2SD1164



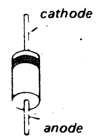
2SD773
2SD774



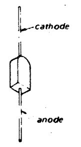
1SS119
1SS148


cathode
anode

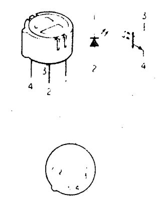
1N4148TP RD7.5EB1
1SS133 RD8.2EL2
RD5.1EL1 RD10EB2
RD5.1EL2 RD10EL3
RD5.1EL3 RD12EB3


cathode
anode

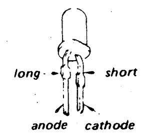
PH302B


cathode
anode

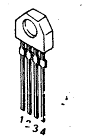
GP2S02A
GP2S02B
GP2S02C



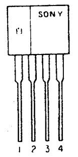
TLG123A
TLR123
TLY123


long
short
anode
cathode

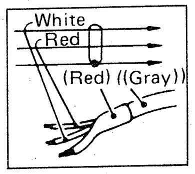
THS103



DM211

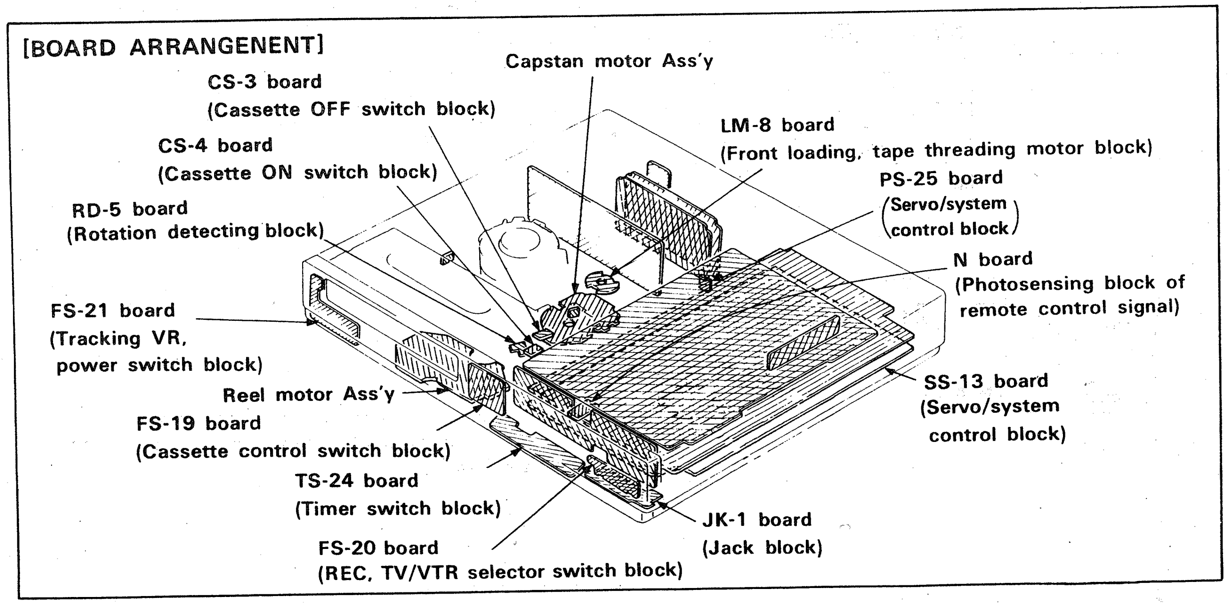


- Color code of sleeving over the end of the jacket.


White
Red
(Red)
(Gray)

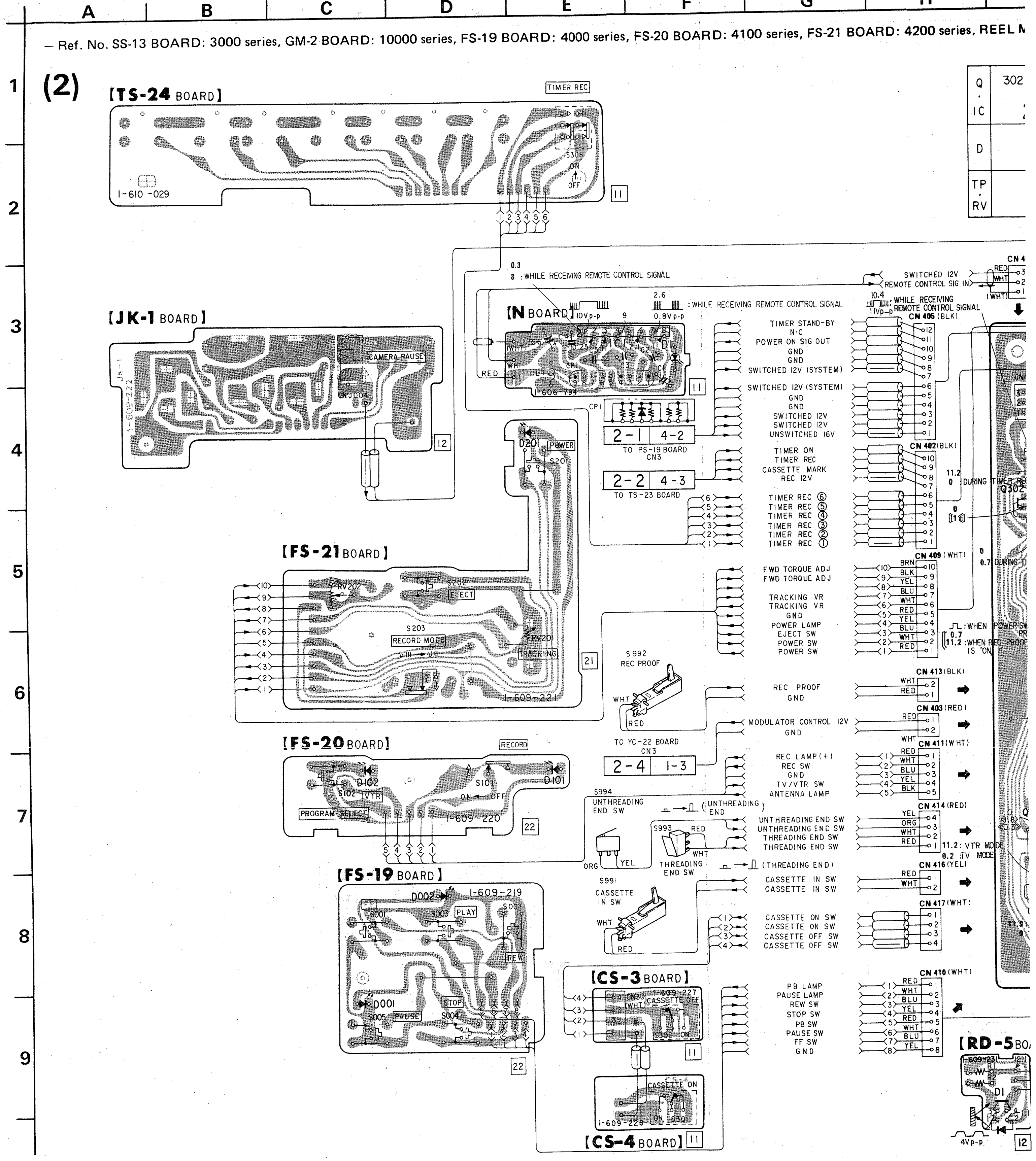
- ○— indicates a lead wire mounted on the component side.
  – indicates a lead wire mounted on the printed side.
- Through hole
- ▨ Soldering side
- ▨ Component side
- ▨ B + pattern

[BOARD ARRANGENENT]


Capstan motor Ass'y
CS-3 board
(Cassette OFF switch block)
CS-4 board
(Cassette ON switch block)
RD-5 board
(Rotation detecting block)
LM-8 board
(Front loading, tape threading motor block)
PS-25 board
(Servo/system control block)
N board
(Photosensing block of remote control signal)
FS-21 board
(Tracking VR, power switch block)
Reel motor Ass'y
FS-19 board
(Cassette control switch block)
TS-24 board
(Timer switch block)
FS-20 board
(REC, TV/VTR selector switch block)
SS-13 board
(Servo/system control block)
JK-1 board
(Jack block)

FS-21 (TRACKING VOLUME POWER SWITCH) **PS-25** (REEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR) **CAPST**

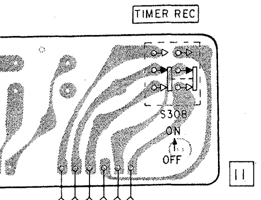
— Ref. No. SS-13 BOARD: 3000 series, GM-2 BOARD: 10000 series, FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL M


A B C D E F G H
1 2 3 4 5 6 7 8 9
(2)
[TS-24 BOARD]
TIMER REC
S305
ON
OFF
1-610-029
11
1 2 3 4 5 6
0.3
8 : WHILE RECEIVING REMOTE CONTROL SIGNAL
2.6
: WHILE RECEIVING REMOTE CONTROL SIGNAL
[N BOARD]
10Vp-p
9
0.8Vp-p
IC1
D1
CP1
1-606-794
11
[JK-1 BOARD]
CAMERA PAUSE
CN3004
1-609-222
12
D201
POWER
S201
2-1 4-2
TO PS-19 BOARD CN3
2-2 4-3
TO TS-23 BOARD
SWITCHED 12V
REMOTE CONTROL SIG IN
10.4
11Vp-p
: WHILE RECEIVING REMOTE CONTROL SIGNAL
CN 405 (BLK)
TIMER STAND-BY
N·C
POWER ON SIG OUT
GND
GND
SWITCHED 12V (SYSTEM)
SWITCHED 12V (SYSTEM)
GND
GND
SWITCHED 12V
SWITCHED 12V
UNSWITCHED 16V
CN 402 (BLK)
TIMER ON
TIMER REC
CASSETTE MARK
REC 12V
TIMER REC ⑥
TIMER REC ⑤
TIMER REC ④
TIMER REC ③
TIMER REC ②
TIMER REC ①
11.2
0 : DURING TIMER REC
Q302
0
[11]
CN 409 (WHT)
FWD TORQUE ADJ
FWD TORQUE ADJ
TRACKING VR
TRACKING VR
GND
POWER LAMP
EJECT SW
POWER SW
POWER SW
BRN BLK YEL BLU WHT RED YEL BLU WHT RED
0
0.7 DURING T
: WHEN POWER SW
0.7
11.2 : WHEN REC PROOF IS "ON"
[FS-21 BOARD]
RV202
S202
EJECT
S203
RECORD MODE
RV201
TRACKING
1-609-221
21
S992
REC PROOF
WHT
RED
CN 413 (BLK)
REC PROOF
GND
CN 403 (RED)
MODULATOR CONTROL 12V
GND
TO YC-22 BOARD CN3
2-4 1-3
CN 411 (WHT)
REC LAMP (+)
REC SW
GND
TV/VTR SW
ANTENNA LAMP
[FS-20 BOARD]
RECORD
D102
S102
VTR
S101
ON
OFF
D101
PROGRAM SELECT
1-609-220
22
S994
UNTHREADING END SW
(UNTHREADING END)
S993
THREADING END SW
ORG
YEL
WHT
CN 414 (RED)
UNTHREADING END SW
UNTHREADING END SW
THREADING END SW
THREADING END SW
(THREADING END)
11.2 : VTR MODE
0.2 : TV MODE
S991
CASSETTE IN SW
CN 416 (YEL)
CASSETTE IN SW
CASSETTE IN SW
CN 417 (WHT)
CASSETTE ON SW
CASSETTE ON SW
CASSETTE OFF SW
CASSETTE OFF SW
[FS-19 BOARD]
D002
1-609-219
FF
S001
S003
PLAY
S002
REW
D001
S005
PAUSE
STOP
S004
22
[CS-3 BOARD]
CN301 (WHT)
1-609-227
CASSETTE OFF
S302
ON
11
CASSETTE ON
1-609-228
ON
S301
[CS-4 BOARD]
11
CN 410 (WHT)
PB LAMP
PAUSE LAMP
REW SW
STOP SW
PB SW
PAUSE SW
FF SW
GND
[RD-5 BO
1-609-231
R1
R2
D1
4Vp-p
12
Q
IC
D
TP
RV
302

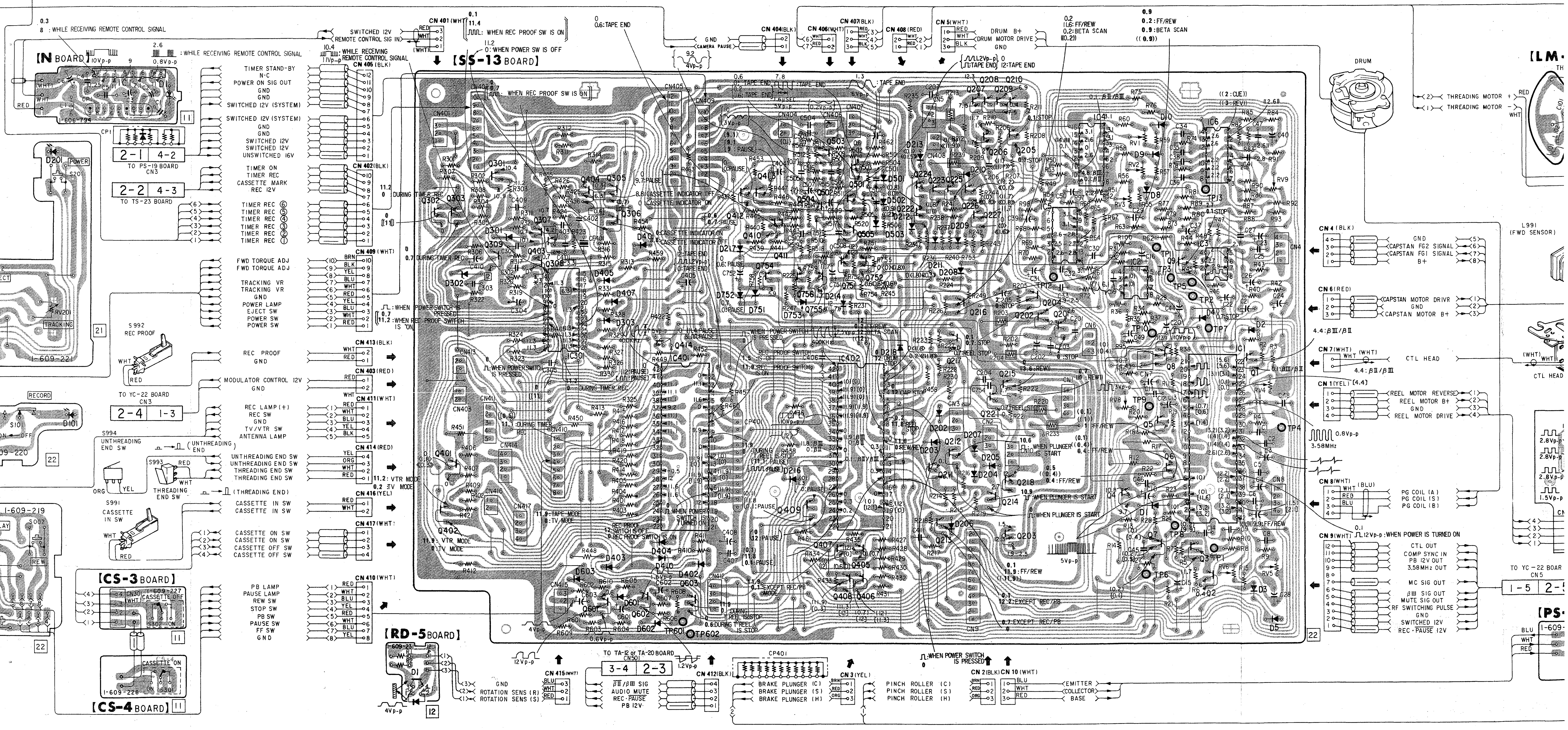
REEL MOTOR (REEL MOTOR) **CAPSTAN MOTOR** (CAPSTAN MOTOR) **TS-24** (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (ROTATION DETECTOR) **CS-3** (CASSETT

TOR DRIVE) | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T |

FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL MOTOR BOARD: 5000 series, CAPSTAN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200 series, CS-3·CS-4 BOARD: 9300 se


TIMER REC
S308
ON
OFF
1 2 3 4 5 6
11

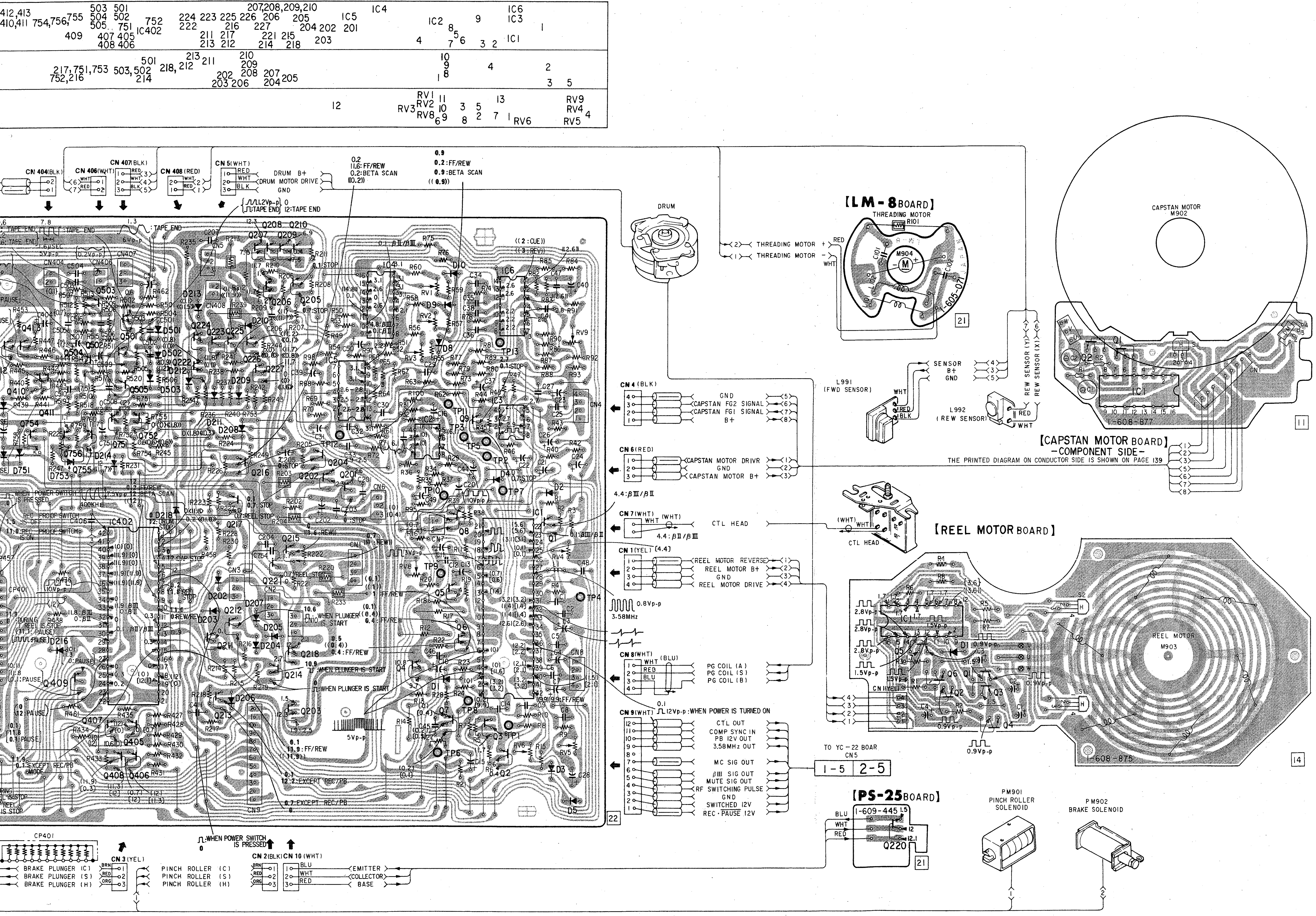
	I	J	K	L	M	N	O	P	Q	R
Q·IC	302 303 301 309 401 402	307 403 404 308 IC301 601	305 306 602 414 IC401 603	412,413 410,411 754,756,	755 503 501 504 502 505 751 409 407 405 408 406 IC402	752 224 223 225 226 222 216 211 217 213 212	207,208,209,210 206 205 227 204 202 221 215 203 214 218 IC5 201	IC4 IC2 4 8 5 7	6 9 3 2 IC6 IC3 IC1 1	
D	302 301	603	405 407 303 403 601 401 404 410 602	402	217,751,753 752,216 501 503,502 214	218, 212 213 211 202 203 206 210 209 208	207 204 205	10 9 1 8	4 2 3	5
TP·RV			601 602				12	RV1 RV3 RV2 RV8 11 10 6 9	3 5 8 2 13 7 1 RV6	RV9 RV4 RV5 4


[N BOARD]
[SS-13 BOARD]
[CS-3 BOARD]
[CS-4 BOARD]
[RD-5 BOARD]
[PS-
[LM-
DRUM
L991 (FWD SENSOR)
CTL HEAD
SWITCHED 12V
REMOTE CONTROL SIG IN
WHILE RECEIVING REMOTE CONTROL SIGNAL
0.8Vp-p
10Vp-p
TIMER STAND-BY
POWER ON SIG OUT
SWITCHED 12V (SYSTEM)
UNSWITCHED 16V
TO PS-19 BOARD
TO TS-23 BOARD
TIMER ON
TIMER REC
CASSETTE MARK
REC 12V
FWD TORQUE ADJ
TRACKING VR
POWER LAMP
EJECT SW
POWER SW
REC PROOF
MODULATOR CONTROL 12V
TO YC-22 BOARD
REC LAMP (+)
REC SW
TV/VTR SW
ANTENNA LAMP
UNTHREADING END SW
THREADING END SW
CASSETTE IN SW
CASSETTE ON SW
CASSETTE OFF SW
PB LAMP
PAUSE LAMP
REW SW
STOP SW
PB SW
PAUSE SW
FF SW
GND
CN 401 (WHT)
CN 402 (BLK)
CN 403 (RED)
CN 404 (BLK)
CN 405 (BLK)
CN 406 (WHT)
CN 407 (BLK)
CN 408 (RED)
CN 409 (WHT)
CN 410 (WHT)
CN 411 (WHT)
CN 412 (BLK)
CN 413 (BLK)
CN 414 (RED)
CN 415 (WHT)
CN 416 (YEL)
CN 417 (WHT)
CN 5 (WHT)
DRUM B+
DRUM MOTOR DRIVE
THREADING MOTOR
CN 4 (BLK)
CAPSTAN FG2 SIGNAL
CAPSTAN FG1 SIGNAL
CN 6 (RED)
CAPSTAN MOTOR DRIVR
CAPSTAN MOTOR B+
CN 7 (WHT)
CN 1 (YEL)
REEL MOTOR REVERSE
REEL MOTOR B+
REEL MOTOR DRIVE
CN 8 (WHT)
PG COIL (A)
PG COIL (S)
PG COIL (B)
CN 9 (WHT)
CTL OUT
COMP SYNC IN
PB 12V OUT
3.58MHz OUT
MC SIG OUT
βIII SIG OUT
MUTE SIG OUT
RF SWITCHING PULSE
SWITCHED 12V
REC·PAUSE 12V
TO YC-22 BOARD CN5
TO TA-12 or TA-20 BOARD CN501
βII/βIII SIG
AUDIO MUTE
REC·PAUSE
PB 12V
CP401
BRAKE PLUNGER (C)
BRAKE PLUNGER (S)
BRAKE PLUNGER (H)
CN 3 (YEL)
PINCH ROLLER (C)
PINCH ROLLER (S)
PINCH ROLLER (H)
CN 2 (BLK)
CN 10 (WHT)
EMITTER
COLLECTOR
BASE
ROTATION SENS (R)
ROTATION SENS (S)
WHEN POWER SWITCH IS PRESSED
WHEN PLUNGER IS START
0.6: TAPE END
0.2: FF/REW
0.9: BETA SCAN
3.58MHz
S992 REC PROOF
S993
S994 UNTHREADING END SW
S991 CASSETTE IN SW
S302
S20
D201
RV201
TRACKING
POWER
RECORD
S10
D101
1-609-221
1-609-220
1-609-219
1-609-227
1-609-228
1-609-231
1-606-794

S-24 (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (ROTATION DETECTOR) **CS-3** (CASSETTE ON SWITCH) **CS-4** (CASSETTE OFF SWITCH) **N** (REMOCON SIGNAL SENSOR)

L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | A1

0 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200 series, CS-3·CS-4 BOARD: 9300 series, N BOARD: 9600 series –

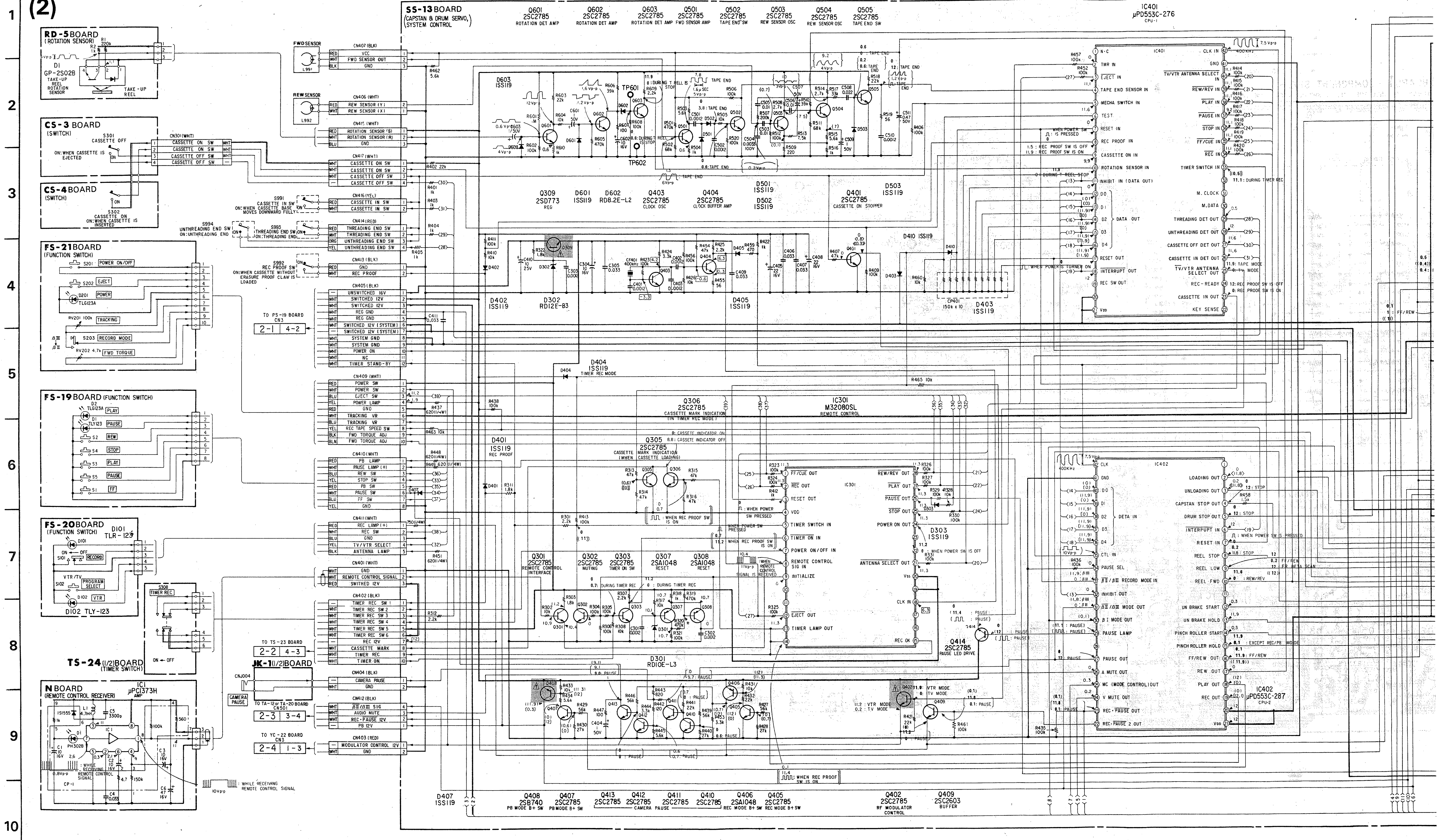

[LM-8 BOARD]
THREADING MOTOR
R101
M904
THREADING MOTOR +
THREADING MOTOR –
DRUM
DRUM B+
DRUM MOTOR DRIVE
GND
CAPSTAN MOTOR
M902
[CAPSTAN MOTOR BOARD]
–COMPONENT SIDE–
THE PRINTED DIAGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 139
1-608-877
SENSOR
B+
GND
REW SENSOR (Y)
REW SENSOR (X)
L991 (FWD SENSOR)
L992 (REW SENSOR)
CN4 (BLK)
GND
CAPSTAN FG2 SIGNAL
CAPSTAN FG1 SIGNAL
B+
CN6 (RED)
CAPSTAN MOTOR DRIVR
GND
CAPSTAN MOTOR B+
CN7 (WHT)
CTL HEAD
CN1 (YEL)
REEL MOTOR REVERSE
REEL MOTOR B+
GND
REEL MOTOR DRIVE
[REEL MOTOR BOARD]
REEL MOTOR
M903
1-608-875
CN8 (WHT)
PG COIL (A)
PG COIL (S)
PG COIL (B)
CN9 (WHT)
12Vp-p: WHEN POWER IS TURNED ON
CTL OUT
COMP SYNC IN
PB 12V OUT
3.58MHz OUT
MC SIG OUT
βIII SIG OUT
MUTE SIG OUT
RF SWITCHING PULSE
GND
SWITCHED 12V
REC·PAUSE 12V
TO YC-22 BOARD CN5
1-5
2-5
[PS-25 BOARD]
1-609-445
Q220
PM901 PINCH ROLLER SOLENOID
PM902 BRAKE SOLENOID
CP401
CN 3 (YEL)
BRAKE PLUNGER (C)
BRAKE PLUNGER (S)
BRAKE PLUNGER (H)
CN 2 (BLK)
CN 10 (WHT)
PINCH ROLLER (C)
PINCH ROLLER (S)
PINCH ROLLER (H)
EMITTER
COLLECTOR
BASE
WHEN POWER SWITCH IS PRESSED
CN 404 (BLK)
CN 406 (WHT)
CN 407 (BLK)
CN 408 (RED)
CN 5 (WHT)
0.2: FF/REW
0.9: BETA SCAN
4.4: βII/βIII
3.58MHz
0.8Vp-p
5Vp-p
WHEN PLUNGER IS START
IC402
IC1
IC2
IC3
IC5
IC6
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
22
21
14
11

SS-13 (SERVO/SYSTEM CONTROL) **FS-19** (CASSETTE CONTROL SWITCH) **FS-20** (REC, TV/VTR SELECT SWITCH) **FS-21** (TRACKING VOLUME POWER SWITCH) **PS-25** (REEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR) **CAPSTAN M**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

– Ref. No. SS-13 BOARD: 3000 series, GM-2 BOARD: 10000 series, FS-19 BOARD: 4000 series, FS-20 BOARD: 4100 series, FS-21 BOARD: 4200 series, REEL MOTOR BOARD: 5000 series, CAPSTAN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000

(2)

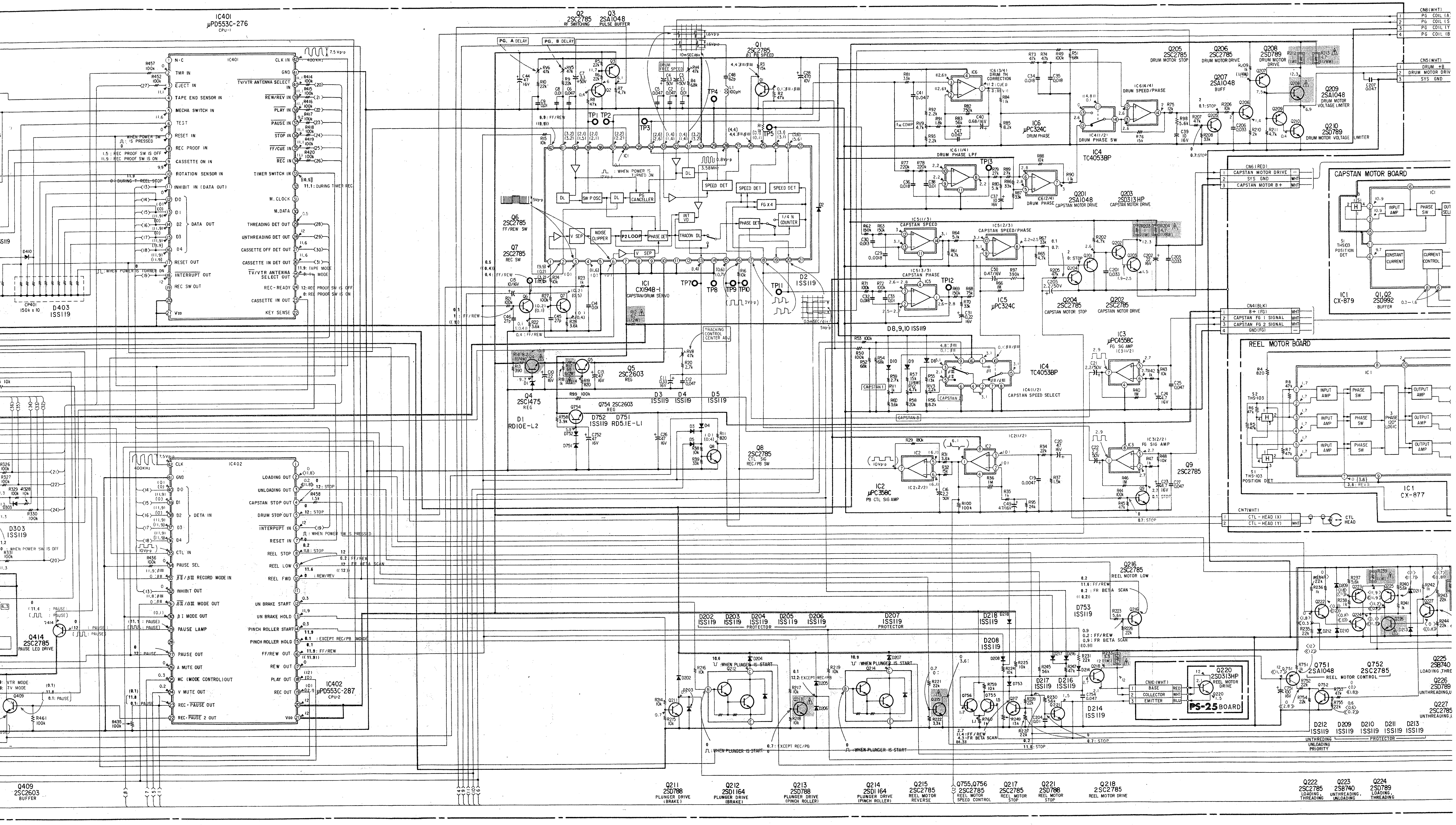

1
2
3
4
5
6
7
8
9
10
RD-5 BOARD (ROTATION SENSOR)
D1 GP-2S02B TAKE-UP REEL ROTATION SENSOR
CS-3 BOARD (SWITCH)
S301 CASSETTE OFF
CS-4 BOARD (SWITCH)
S302 CASSETTE ON
FS-21 BOARD (FUNCTION SWITCH)
S201 POWER ON/OFF
S202 EJECT
D201 POWER TLG123A
RV201 100k TRACKING
S203 RECORD MODE
RV202 4.7k FWD TORQUE
FS-19 BOARD (FUNCTION SWITCH)
PLAY
PAUSE
REW
STOP
FF
FS-20 BOARD (FUNCTION SWITCH)
D101 TLR-123
S101 RECORD
S102 PROGRAM SELECT
D102 VTR
D102 TLY-123
S308 TIMER REC
TS-24 (1/2) BOARD (TIMER SWITCH)
N BOARD (REMOTE CONTROL RECEIVER)
IC1 μPC1373H
FWD SENSOR
REW SENSOR
TO PS-19 BOARD CN3
2-1 4-2
TO TS-23 BOARD
2-2 4-3
JK-1 (1/2) BOARD
CAMERA PAUSE
TO TA-12 or TA-20 BOARD CN501
2-3 3-4
TO YC-22 BOARD CN3
2-4 1-3
SS-13 BOARD (CAPSTAN & DRUM SERVO, SYSTEM CONTROL)
Q601 2SC2785 ROTATION DET AMP
Q602 2SC2785 ROTATION DET AMP
Q603 2SC2785 ROTATION DET AMP
Q501 2SC2785 FWD SENSOR AMP
Q502 2SC2785 TAPE END SW
Q503 2SC2785 REW SENSOR OSC
Q504 2SC2785 REW SENSOR OSC
Q505 2SC2785 TAPE END SW
IC401 μPD553C-276 CPU-1
Q309 2SD773 REG
D601 1SS119
D602 RD8.2E-L2
Q403 2SC2785 CLOCK OSC
Q404 2SC2785 CLOCK BUFFER AMP
D501 1SS119
D502 1SS119
Q401 2SC2785 CASSETTE ON STOPPER
D503 1SS119
D410 1SS119
D402 1SS119
D302 RD12E-B3
D405 1SS119
D403 1SS119
D404 1SS119 TIMER REC MODE
Q306 2SC2785 CASSETTE MARK INDICATION (IN TIMER REC MODE)
IC301 M32080SL REMOTE CONTROL
Q305 2SC2785 CASSETTE MARK INDICATION (WHEN CASSETTE LOADING)
D401 1SS119 REC PROOF
IC402 μPD553C-287 CPU-2
D303 1SS119
Q301 2SC2785 REMOTE CONTROL INTERFACE
Q302 2SC2785 MUTING
Q303 2SC2785 TIMER ON SW
Q307 2SA1048 RESET
Q308 2SA1048 RESET
D301 RD10E-L3
Q414 2SC2785 PAUSE LED DRIVE
D407 1SS119
Q408 2SB740 PB MODE B+ SW
Q407 2SC2785 PB MODE B+ SW
Q413 2SC2785
Q412 2SC2785
Q411 2SC2785 CAMERA PAUSE
Q410 2SC2785
Q406 2SA1048 REC MODE B+ SW
Q405 2SC2785 REC MODE B+ SW
Q402 2SC2785 RF MODULATOR CONTROL
Q409 2SC2603 BUFFER

ONTROL | NEW | NEW | SERVO, SYSTEM CONTROL | SERVO, SYSTEM CONTROL

EEL MOTOR DRIVE) **REEL MOTOR** (REEL MOTOR) **CAPSTAN MOTOR** (CAPSTAN MOTOR) **TS-24** (TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (ROTATION DETECTOR) **CS-3** (CASSETTE ON SWITCH)

K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | A1

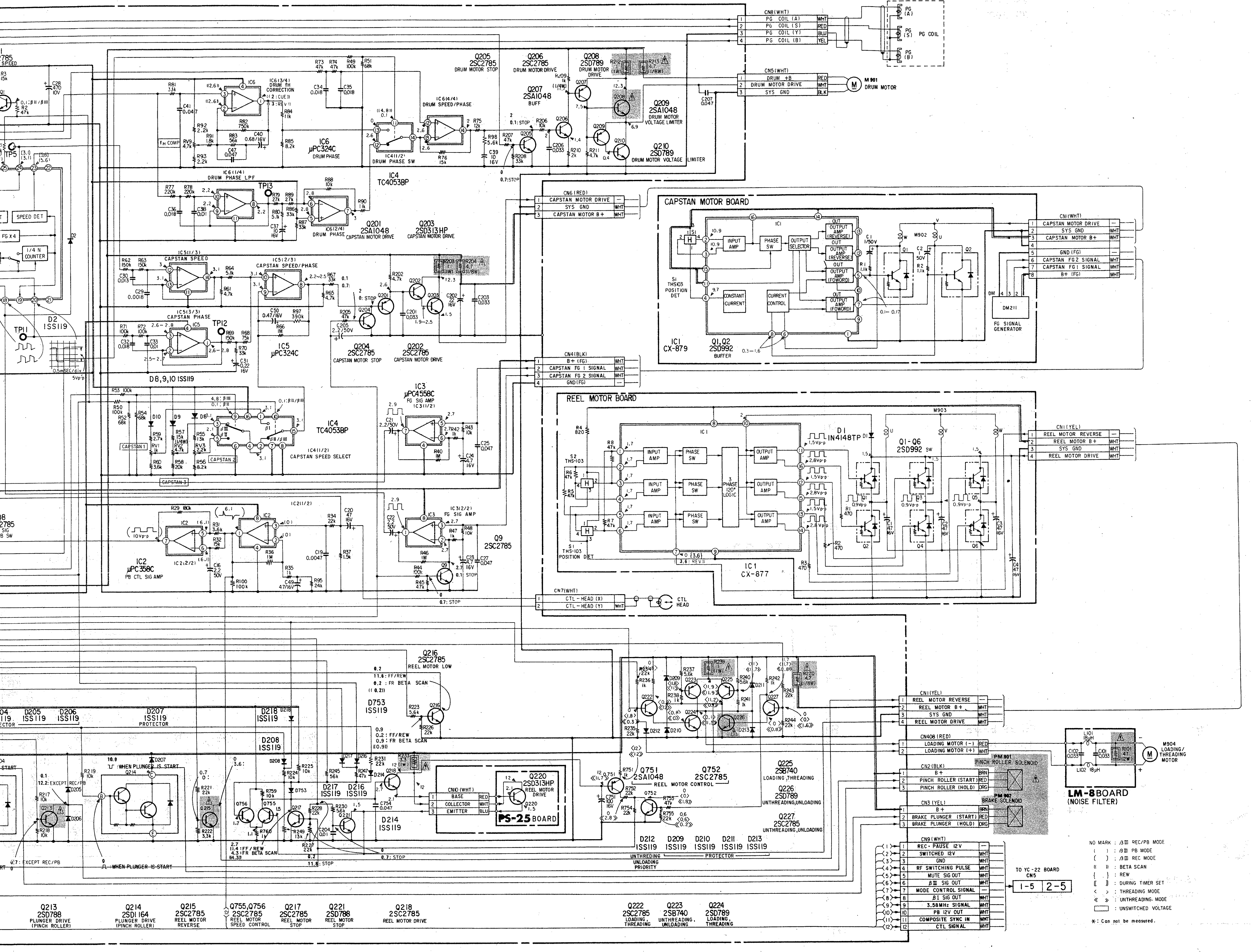
AN MOTOR BOARD: 5100 series, PS-25 BOARD: 7200 series, TS-24 BOARD: 8300 series, LM-8 BOARD: 9000 series, JK-1 BOARD: 9100 series, RD-5 BOARD: 9200 series, CS-3·CS-4 BOARD: 9300 series, N BOARD: 9600 series –


IC401 μPD553C-276 CPU-1
IC402 μPD553C-287 CPU-2
IC1 CX194B-1 CAPSTAN/DRUM SERVO
IC2 μPC358C PB CTL SIG AMP
IC3 μPC4558C FG SIG AMP
IC4 TC4053BP
IC5 μPC324C
IC6 μPC324C DRUM PHASE
CAPSTAN MOTOR BOARD
IC1 CX-879
REEL MOTOR BOARD
IC1 CX-877
PS-25 BOARD
Q2 2SC2785 RF SWITCHING
Q3 2SA1048 PULSE BUFFER
Q1 2SC2785 B1 FG SPEED
Q4 2SC1475 REG
Q5 2SC2603 REG
Q6 2SC2785 FF/REW SW
Q7 2SC2785 REC SW
Q8 2SC2785 CTL REC/PB SW
Q9 2SC2785
Q201 2SA1048 CAPSTAN MOTOR DRIVE
Q203 2SD313HP CAPSTAN MOTOR DRIVE
Q204 2SC2785 CAPSTAN MOTOR STOP
Q202 2SC2785 CAPSTAN MOTOR DRIVE
Q205 2SC2785 DRUM MOTOR STOP
Q206 2SC2785 DRUM MOTOR DRIVE
Q207 2SA1048 BUFF
Q208 2SD789 DRUM MOTOR DRIVE
Q209 2SA1048 DRUM MOTOR VOLTAGE LIMITER
Q210 2SD789 DRUM MOTOR VOLTAGE LIMITER
Q211 2SD788 PLUNGER DRIVE (BRAKE)
Q212 2SD1164 PLUNGER DRIVE (BRAKE)
Q213 2SD788 PLUNGER DRIVE (PINCH ROLLER)
Q214 2SD1164 PLUNGER DRIVE (PINCH ROLLER)
Q215 2SC2785 REEL MOTOR REVERSE
Q755,Q756 2SC2785 REEL MOTOR SPEED CONTROL
Q217 2SC2785 REEL MOTOR STOP
Q221 2SD788 REEL MOTOR STOP
Q218 2SC2785 REEL MOTOR DRIVE
Q216 2SC2785 REEL MOTOR LOW
Q220 2SD313HP REEL MOTOR DRIVE
Q751 2SA1048 REEL MOTOR CONTROL
Q752 2SC2785
Q222 2SC2785 LOADING, THREADING
Q223 2SB740 UNTHREADING, UNLOADING
Q224 2SD789 LOADING, THREADING
Q225 2SB740 LOADING, THREADING
Q226 2SD789 UNTHREADING, UNLOADING
Q227 2SC2785
Q409 2SC2603 BUFFER
Q414 2SC2785 PAUSE LED DRIVE
D1 RD10E-L2
D752 1SS119
D751 RD5.1E-L1
D403 1SS119
D303 1SS119
D202 1SS119 D203 1SS119 D204 1SS119 D205 1SS119 D206 1SS119 PROTECTOR
D207 1SS119 PROTECTOR
D212 1SS119 D209 1SS119 D210 1SS119 D211 1SS119 D213 1SS119 UNTHREADING UNLOADING PRIORITY PROTECTOR
CN5(WHT) CN6(RED) CN4(BLK) CN7(WHT) CN8(WHT)
PG COIL (A) PG COIL (S) PG COIL (Y) PG COIL (B)
DRUM +B DRUM MOTOR DRIVE SYS GND
CAPSTAN MOTOR DRIVE SYS GND CAPSTAN MOTOR B+
B+ (FG) CAPSTAN FG 1 SIGNAL CAPSTAN FG 2 SIGNAL GND(FG)
CTL-HEAD (X) CTL-HEAD (Y) CTL HEAD
TP1 TP2 TP3 TP4 TP5 TP7 TP8 TP9 TP10 TP11 TP12 TP13

TIMER SWITCH) **LM-8** (NOISE FILTER) **JK-1** (JACK) **RD-5** (ROTATION DETECTOR) **CS-3** (CASSETTE ON SWITCH) **CS-4** (CASSETTE OFF SWITCH) **N** (REMOCON SIGNAL SENSOR)

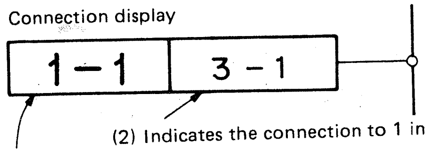
T U V W X Y Z A1 B1 C1 D1 E1

, CS-3·CS-4 BOARD: 9300 series, N BOARD: 9600 series —


DRUM
PG COIL
CN8 (WHT)
PG COIL (A)
PG COIL (S)
PG COIL (Y)
PG COIL (B)
CN5 (WHT)
DRUM +B
DRUM MOTOR DRIVE
SYS GND
M901 DRUM MOTOR
Q205 2SC2785 DRUM MOTOR STOP
Q206 2SC2785 DRUM MOTOR DRIVE
Q207 2SA1048 BUFF
Q208 2SD789 DRUM MOTOR DRIVE
Q209 2SA1048 DRUM MOTOR VOLTAGE LIMITER
Q210 2SD789 DRUM MOTOR VOLTAGE LIMITER
IC6 μPC324C DRUM PHASE
IC4 TC4053BP
IC6(4/4) DRUM SPEED/PHASE
IC6(1/4) DRUM PHASE LPF
IC6(2/4) DRUM PHASE
TP13
Q201 2SA1048 CAPSTAN MOTOR DRIVE
Q203 2SD313HP CAPSTAN MOTOR DRIVE
CN6 (RED)
CAPSTAN MOTOR DRIVE
SYS GND
CAPSTAN MOTOR B+
CAPSTAN MOTOR BOARD
INPUT AMP
PHASE SW
OUTPUT SELECTOR
OUTPUT AMP (REVERSE)
OUTPUT AMP (FOWORD)
CONSTANT CURRENT
CURRENT CONTROL
S1 THS103 POSITION DET
IC1 CX-879
Q1, Q2 2SD992 BUFFER
M902
FG SIGNAL GENERATOR
CN1 (WHT)
CAPSTAN MOTOR DRIVE
SYS GND
CAPSTAN MOTOR B+
GND (FG)
CAPSTAN FG2 SIGNAL
CAPSTAN FG1 SIGNAL
B+ (FG)
IC5(1/3) CAPSTAN SPEED
IC5(2/3) CAPSTAN SPEED/PHASE
IC5(3/3) CAPSTAN PHASE
IC5 μPC324C
TP12
TP11
D2 1SS119
Q204 2SC2785 CAPSTAN MOTOR STOP
Q202 2SC2785 CAPSTAN MOTOR DRIVE
CN4 (BLK)
B+ (FG)
CAPSTAN FG1 SIGNAL
CAPSTAN FG2 SIGNAL
GND (FG)
D8, 9, 10 1SS119
IC4 TC4053BP
IC4(1/2) CAPSTAN SPEED SELECT
IC3 μPC4558C FG SIG AMP
REEL MOTOR BOARD
D1 1N4148TP
Q1-Q6 2SD992
M903
S2 THS-103
S1 THS-103 POSITION DET
3 PHASE 120° LOGIC
IC1 CX-877
CN1 (YEL)
REEL MOTOR REVERSE
REEL MOTOR B+
SYS GND
REEL MOTOR DRIVE
IC2 μPC358C PB CTL SIG AMP
Q9 2SC2785
CN7 (WHT)
CTL-HEAD (X)
CTL-HEAD (Y)
CTL HEAD
Q216 2SC2785 REEL MOTOR LOW
D753 1SS119
D207 1SS119 PROTECTOR
D218 1SS119
D208 1SS119
D205 1SS119
D206 1SS119
WHEN PLUNGER IS START
CN10 (WHT)
BASE
COLLECTOR
EMITTER
Q220 2SD313HP REEL MOTOR DRIVE
PS-25 BOARD
D217 1SS119
D216 1SS119
D214 1SS119
Q751 2SA1048
Q752 2SC2785
REEL MOTOR CONTROL
Q225 2SB740 LOADING, THREADING
Q226 2SD789 UNTHREADING, UNLOADING
Q227 2SC2785 UNTHREADING, UNLOADING
D212 1SS119
D209 1SS119
D210 1SS119
D211 1SS119
D213 1SS119
UNTHREADING UNLOADING PRIORITY
PROTECTOR
CN1 (YEL)
REEL MOTOR REVERSE
REEL MOTOR B+
SYS GND
REEL MOTOR DRIVE
CN408 (RED)
LOADING MOTOR (-)
LOADING MOTOR (+)
CN2 (BLK)
B+
PINCH ROLLER (START)
PINCH ROLLER (HOLD)
PM901 PINCH ROLLER SOLENOID
CN3 (YEL)
B+
BRAKE PLUNGER (START)
BRAKE PLUNGER (HOLD)
PM902 BRAKE SOLENOID
LM-8 BOARD (NOISE FILTER)
M904 LOADING/THREADING MOTOR
CN9 (WHT)
REC·PAUSE 12V
SWITCHED 12V
GND
RF SWITCHING PULSE
MUTE SIG OUT
β III SIG OUT
MODE CONTROL SIGNAL
β I SIG OUT
PB 12V OUT
3.58MHz SIGNAL
COMPOSITE SYNC IN
CTL SIGNAL
TO YC-22 BOARD CN5
1-5
2-5
NO MARK : β III REC/PB MODE
( ) : β III PB MODE
( ) : β II REC MODE
≪ ≫ : BETA SCAN
[ ] : REW
〔 〕 : DURING TIMER SET
< > : THREADING MODE
≪ ≫ : UNTHREADING MODE
▭ : UNSWITCHED VOLTAGE
*: Can not be measured.
Q213 2SD788 PLUNGER DRIVE (PINCH ROLLER)
Q214 2SD1164 PLUNGER DRIVE (PINCH ROLLER)
Q215 2SC2785 REEL MOTOR REVERSE
Q755, Q756 2SC2785 REEL MOTOR SPEED CONTROL
Q217 2SC2785 REEL MOTOR STOP
Q221 2SD788 REEL MOTOR STOP
Q218 2SC2785 REEL MOTOR DRIVE
Q222 2SC2785 LOADING, THREADING
Q223 2SB740 UNTHREADING, UNLOADING
Q224 2SD789 LOADING, THREADING

NOTES:

- Connection display



(2) Indicates the connection to 1 in Fig. 3.

(1) Indicates No.1 in Fig. 1.

Fig. 1 . . . . . . Video block
Fig. 2 . . . . . . Servo/system control block
Fig. 3 . . . . . . Tuner/audio block
Fig. 4 . . . . . . Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : B + bus.
- (▭ : Unswitched)
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

The voltage value is measured using a digital tester (10MΩ/V).

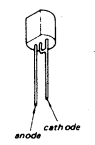
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

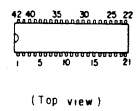
TA-12 (VIF, SIF, AFT, AGC) **TU-36** (TUNER) **TS-23** (TIMER, CHANNEL SWITCH) **JK-1** (JACK SWITCH)

– Ref. No. TA-12 BOARD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

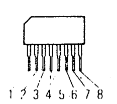
µPC574J


cathode
anode

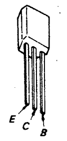
CX885B


42 40 35 30 25 22
1 5 10 15 21
(Top view)

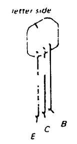
LA7046



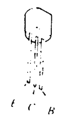
2SA1048
2SA1115
2SC2458
2SC2603



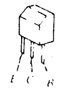
2SA1175
2SC2785


letter side
E C B

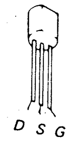
2SC945



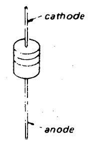
2SD773
2SD774



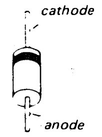
2SK43



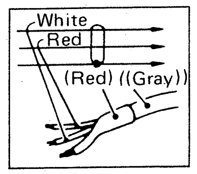
1SS119
1SS148


cathode
anode

1SS133

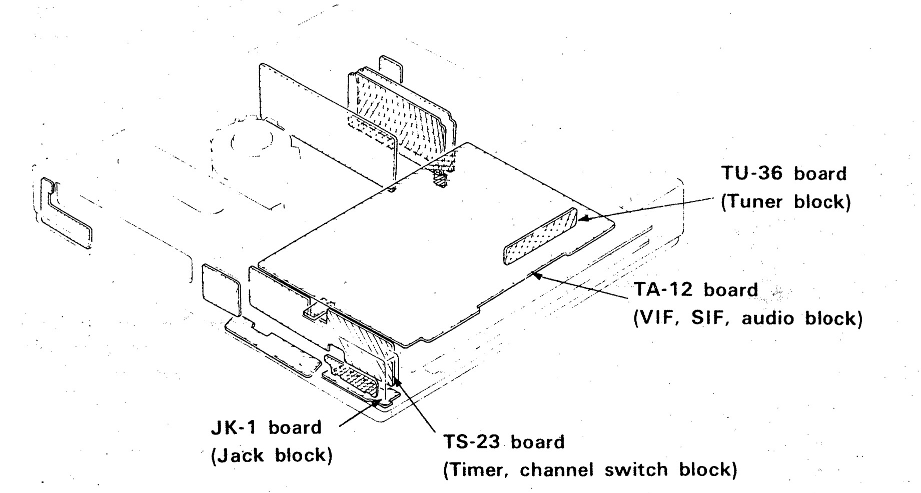

cathode
anode

- Color code of sleeving over the end of the jacket.

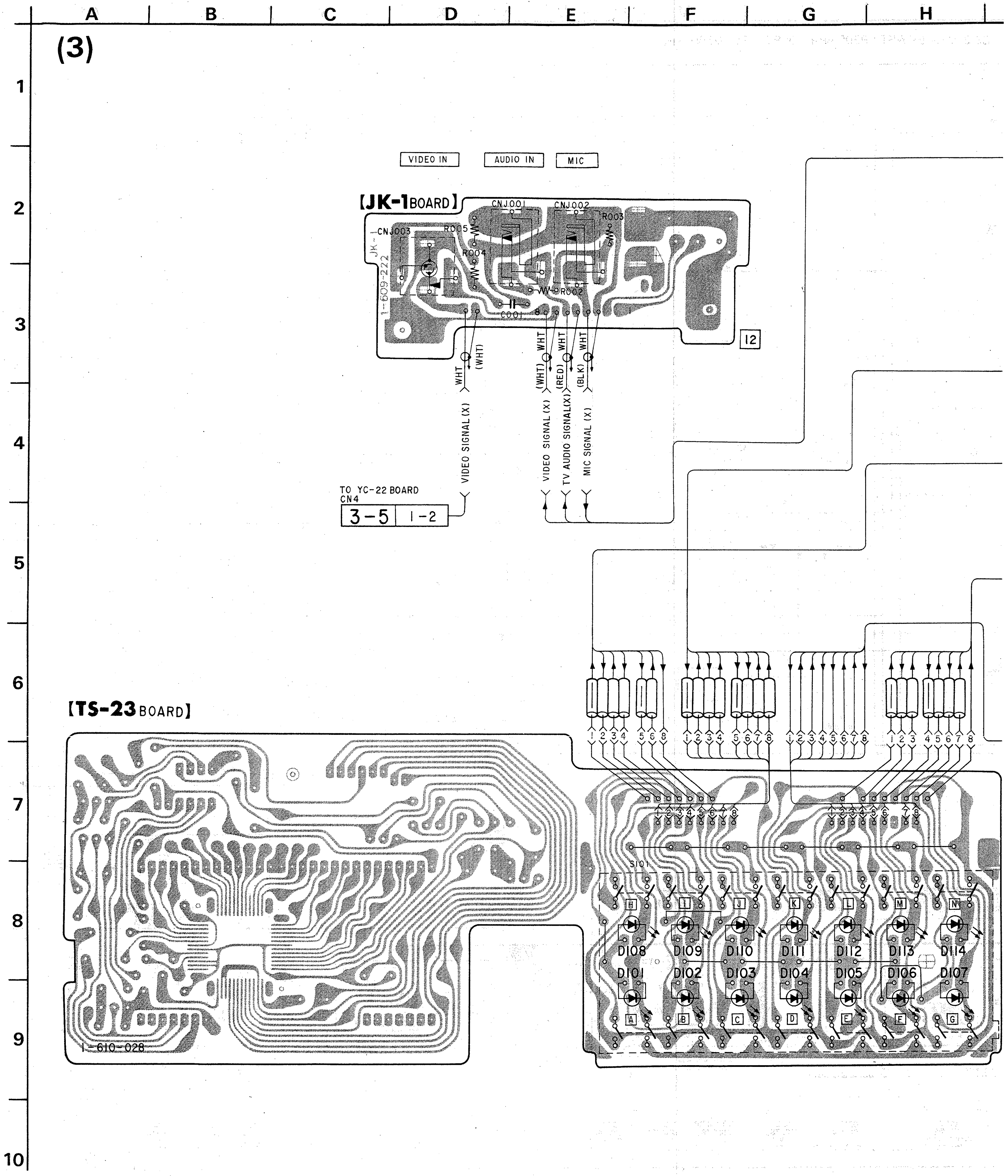

White
Red
(Red) ((Gray))

- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ▨ Soldering side
- ▨ B + pattern
- ▨ B – pattern
- ⬚← indicates side identified with part number.
- Ⓕ : fusible resistor.
- ▲ : nonflammable resistor.

[BOARD ARRANGENENT]

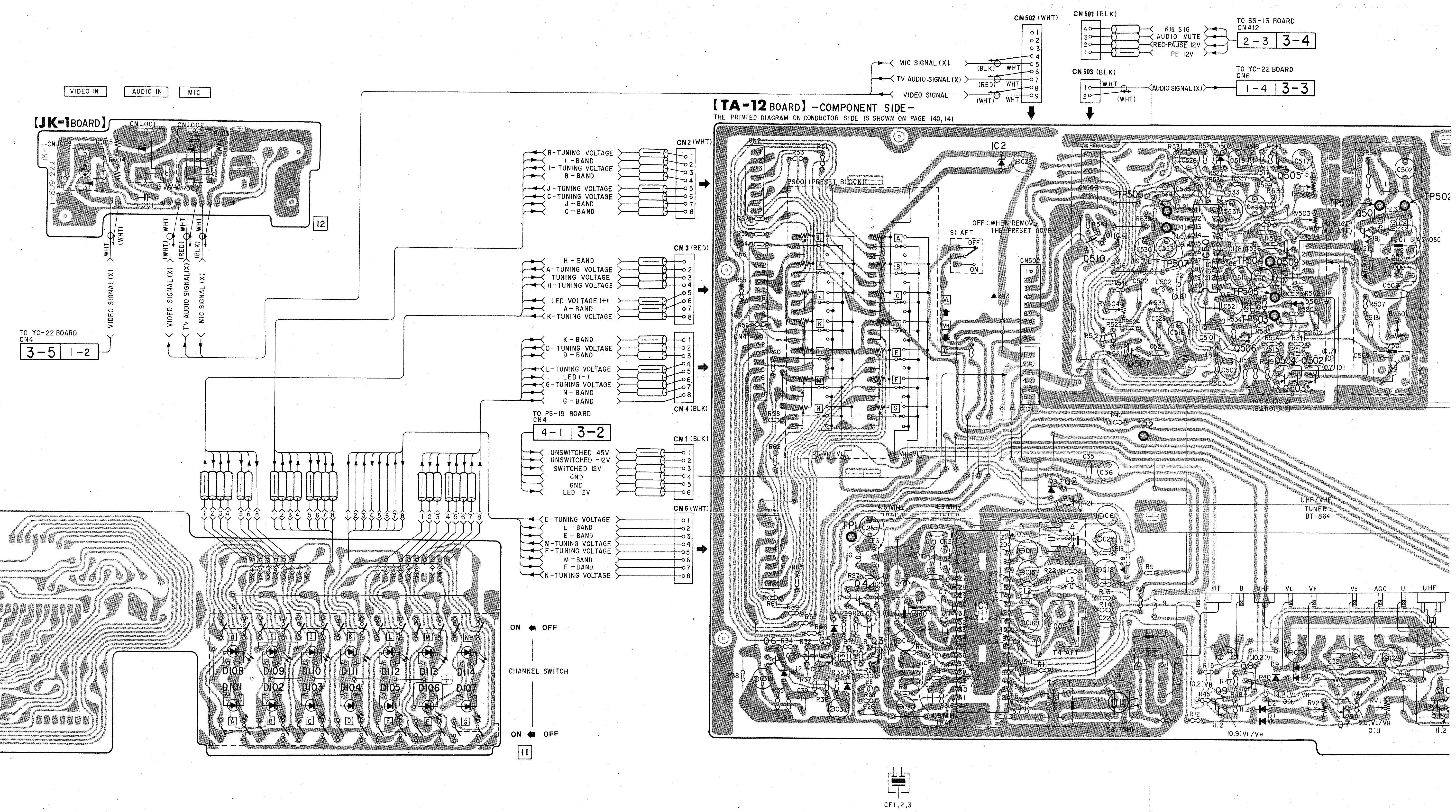

TU-36 board
(Tuner block)
TA-12 board
(VIF, SIF, audio block)
JK-1 board
(Jack block)
TS-23 board
(Timer, channel switch block)

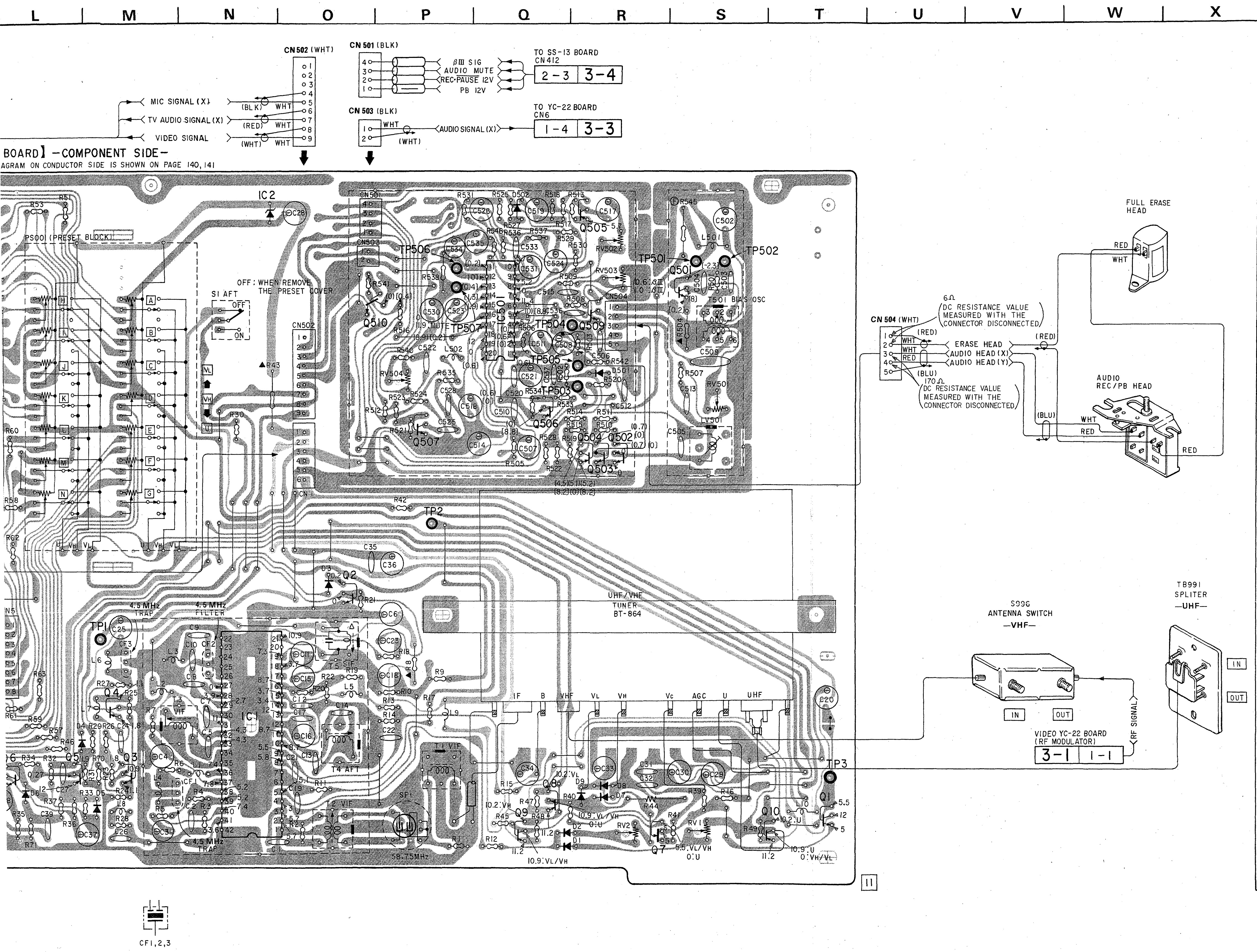
(3)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
VIDEO IN
AUDIO IN
MIC
[JK-1 BOARD]
CNJ001
CNJ002
CNJ003
R005
R004
R003
R002
C001
JK-1
1-609-222
12
WHT
(WHT)
(RED)
(BLK)
VIDEO SIGNAL (X)
TV AUDIO SIGNAL(X)
MIC SIGNAL (X)
TO YC-22 BOARD
CN4
3-5 1-2
[TS-23 BOARD]
1 2 3 4 5 6 8
S101
H I J K L M N
D108 D109 D110 D111 D112 D113 D114
D101 D102 D103 D104 D105 D106 D107
A B C D E F G
1-610-028

s, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S

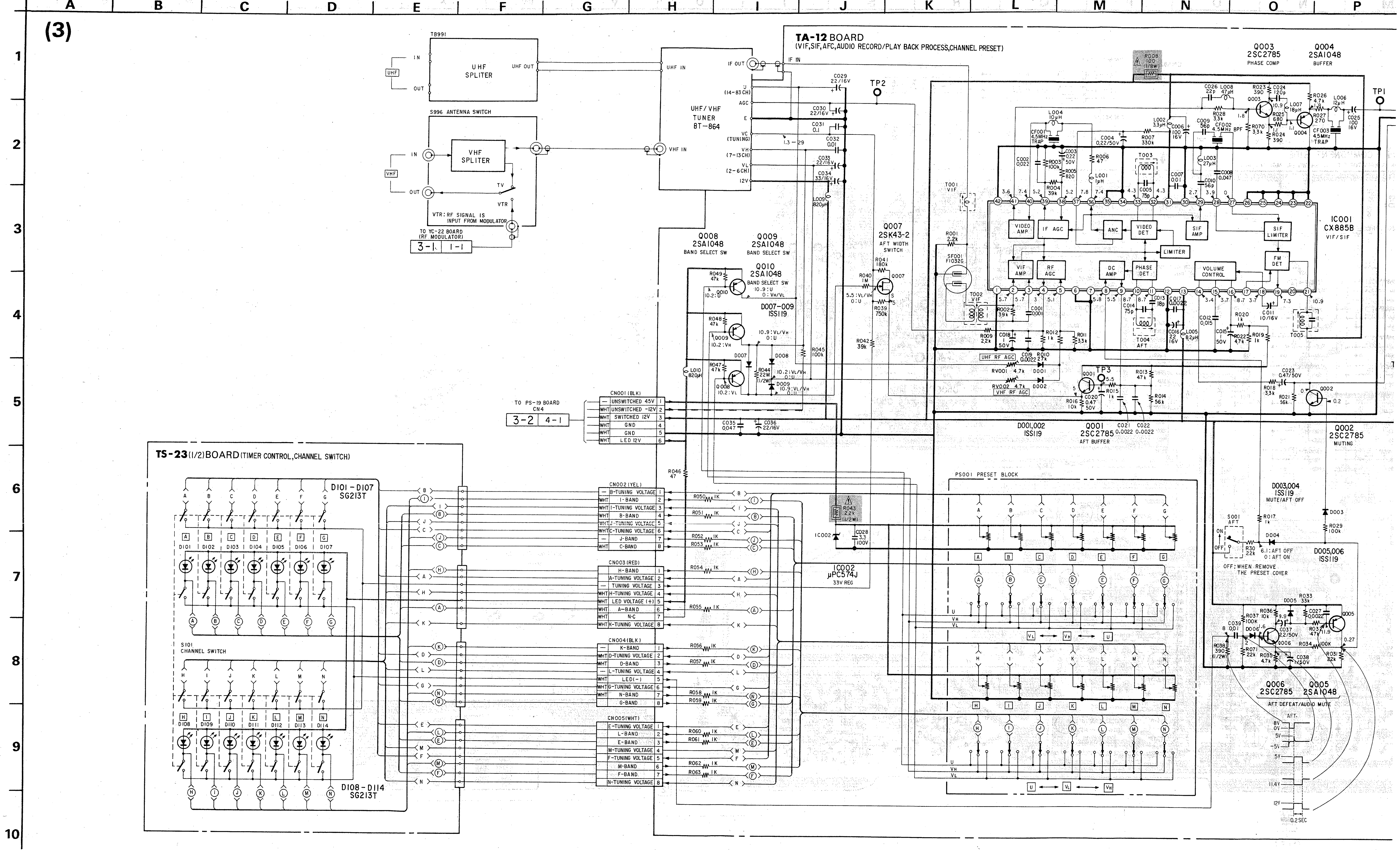

VIDEO IN
AUDIO IN
MIC
【JK-1 BOARD】
CNJ001
CNJ002
CNJ003
1-609-222
VIDEO SIGNAL (X)
VIDEO SIGNAL (X)
TV AUDIO SIGNAL (X)
MIC SIGNAL (X)
TO YC-22 BOARD CN4
3-5 1-2
12
B-TUNING VOLTAGE
I-BAND
I-TUNING VOLTAGE
B-BAND
J-TUNING VOLTAGE
C-TUNING VOLTAGE
J-BAND
C-BAND
CN2 (WHT)
H-BAND
A-TUNING VOLTAGE
TUNING VOLTAGE
H-TUNING VOLTAGE
LED VOLTAGE (+)
A-BAND
K-TUNING VOLTAGE
CN3 (RED)
K-BAND
D-TUNING VOLTAGE
D-BAND
L-TUNING VOLTAGE
LED (-)
G-TUNING VOLTAGE
N-BAND
G-BAND
CN4 (BLK)
TO PS-19 BOARD CN4
4-1 3-2
UNSWITCHED 45V
UNSWITCHED -12V
SWITCHED 12V
GND
GND
LED 12V
CN1 (BLK)
E-TUNING VOLTAGE
L-BAND
E-BAND
M-TUNING VOLTAGE
F-TUNING VOLTAGE
M-BAND
F-BAND
N-TUNING VOLTAGE
CN5 (WHT)
ON OFF
CHANNEL SWITCH
ON OFF
11
S101
D101 D102 D103 D104 D105 D106 D107
D108 D109 D110 D111 D112 D113 D114
CN502 (WHT)
CN501 (BLK)
CN503 (BLK)
MIC SIGNAL (X)
TV AUDIO SIGNAL (X)
VIDEO SIGNAL
BIII SIG
AUDIO MUTE
REC·PAUSE 12V
PB 12V
TO SS-13 BOARD CN412
2-3 3-4
TO YC-22 BOARD CN6
AUDIO SIGNAL (X)
1-4 3-3
【TA-12 BOARD】 -COMPONENT SIDE-
THE PRINTED DIAGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 140, 141
PS001 (PRESET BLOCK)
S1 AFT
OFF: WHEN REMOVE THE PRESET COVER
IC2
IC501
IC1
TP1 TP2 TP501 TP502 TP503 TP504 TP505 TP506 TP507
4.5 MHz TRAP
4.5 MHz FILTER
T1 VIF
T2 VIF
T3 VIF
T4 AFT
T5 SIF
SF1
58.75 MHz
UHF/VHF TUNER BT-864
IF B VHF VL VH Vc AGC U UHF
T501 BIAS OSC
CF1, 2, 3


L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
A1
CN502 (WHT)
CN501 (BLK)
CN503 (BLK)
βIII SIG
AUDIO MUTE
REC·PAUSE 12V
PB 12V
TO SS-13 BOARD CN412
2-3 3-4
TO YC-22 BOARD CN6
1-4 3-3
AUDIO SIGNAL (X)
MIC SIGNAL (X)
TV AUDIO SIGNAL (X)
VIDEO SIGNAL
BOARD] -COMPONENT SIDE-
AGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 140, 141
IC2
PS001 (PRESET BLOCK)
OFF: WHEN REMOVE THE PRESET COVER
S1 AFT
TP501
TP502
TP503
TP504
TP505
TP506
TP507
TP1
TP2
TP3
T501 BIAS OSC
LV501
CN504 (WHT)
6Ω
(DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED)
170Ω
ERASE HEAD
AUDIO HEAD (X)
AUDIO HEAD (Y)
FULL ERASE HEAD
AUDIO REC/PB HEAD
UHF/VHF TUNER BT-864
4.5MHz TRAP
4.5MHz FILTER
IC1
T1 VIF
T2 VIF
T3 SIF
T4 AFT
T5 SIF
SF1
58-75MHz
S996 ANTENNA SWITCH -VHF-
TB991 SPLITER -UHF-
VIDEO YC-22 BOARD (RF MODULATOR)
3-1 1-1
(RF SIGNAL)
IN
OUT
CF1,2,3

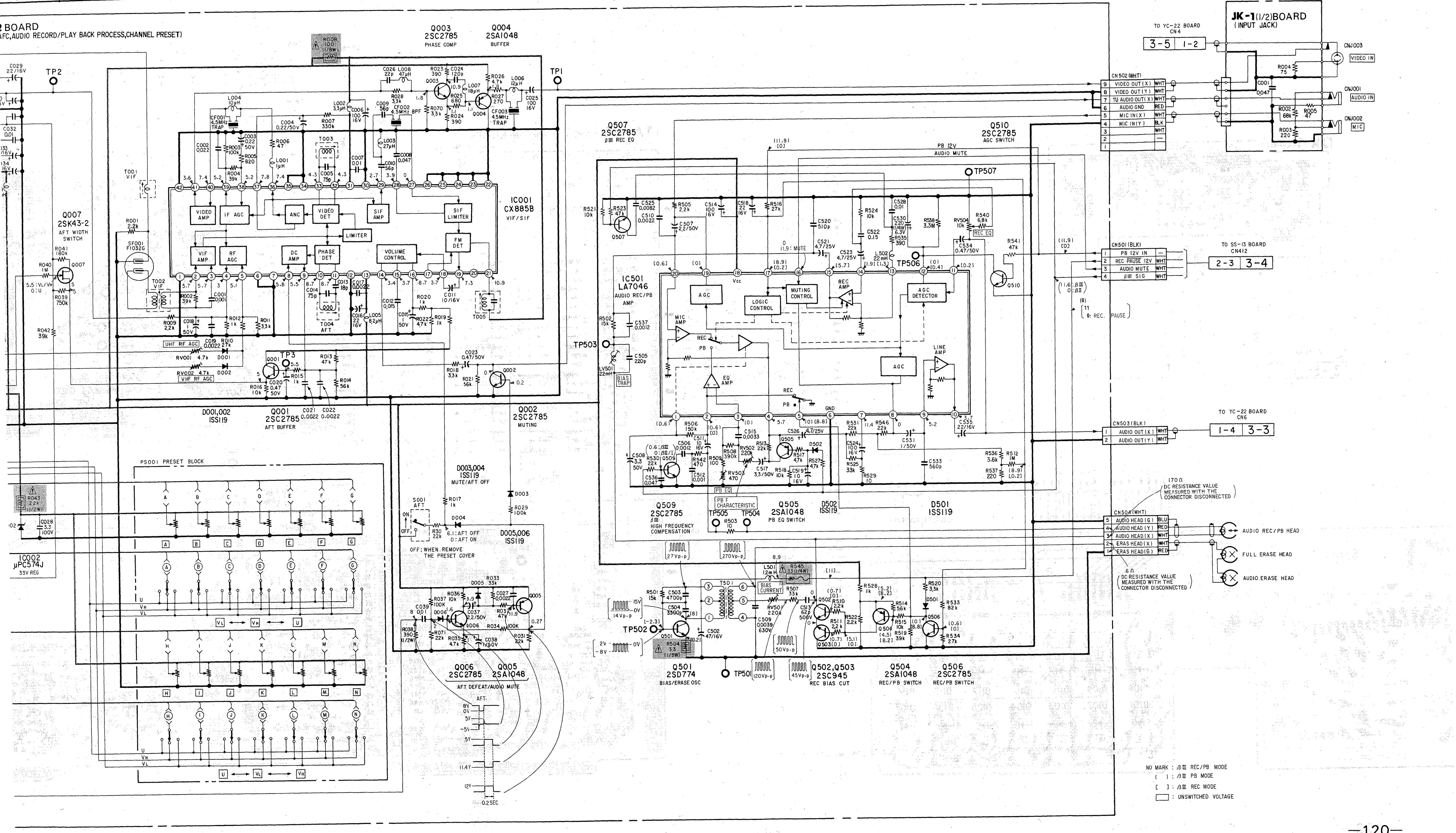
Q, IC	D	TP, RV
IC2 508 505	502	
		RV502
		501,502 506 507 RV503
501 IC501 510 509		
		504
	501	505 RV504 503 RV501
506 507		
504,503,502		LV501
		2
2	3	
		1
4 IC1		
	4	
		3
6 5,3	6 9 8	
8	7	
1	5	
9,7,10	2 1	RV2,1

TA-12 (VIF, SIF, AFT, AGC) **TU-36** (TUNER) **TS-23** (TIMER, CHANNEL SWITCH) **JK-1** (JACK SWITCH) — Ref. No. TA-12 BOARD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series —

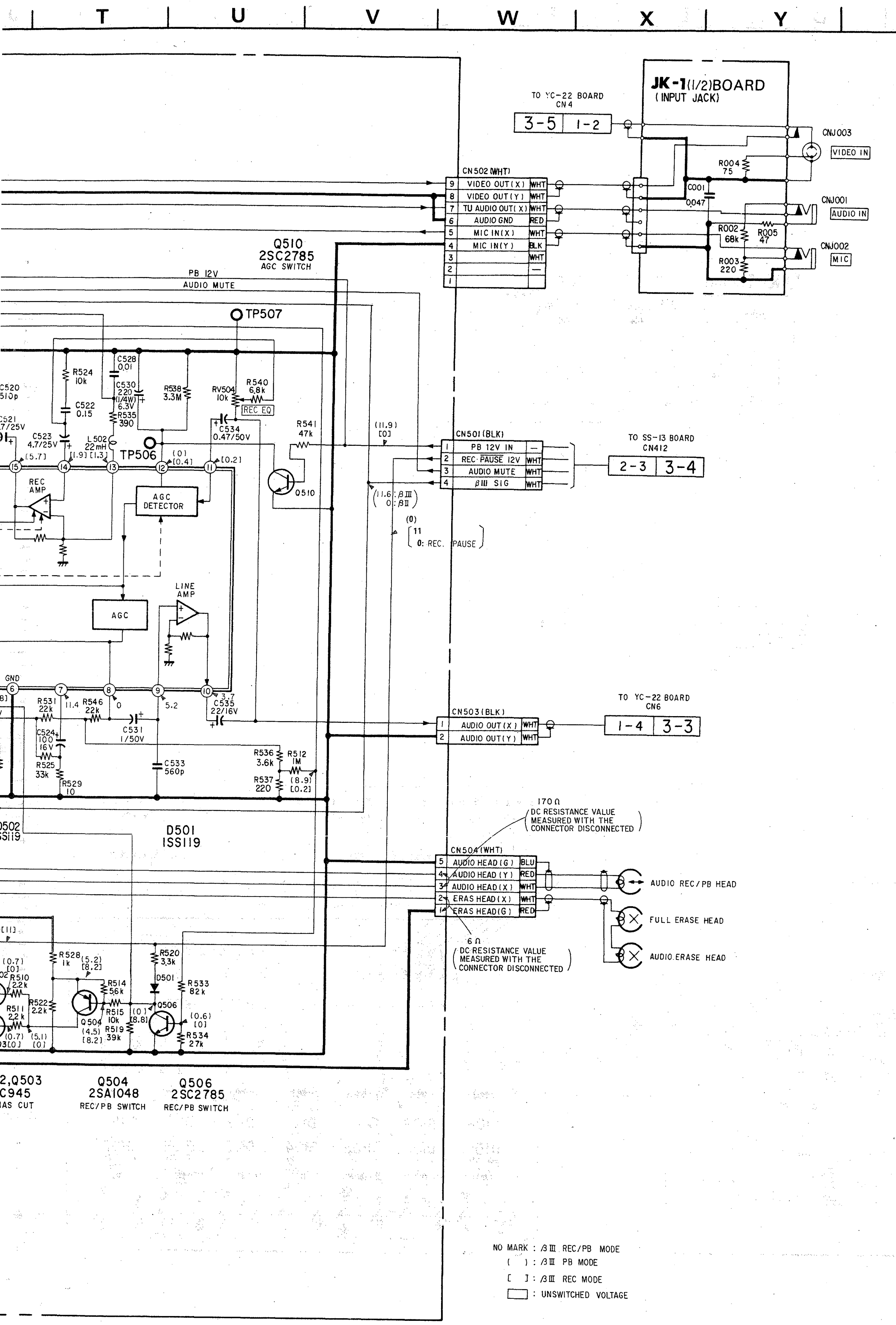
(3)


A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
TB991
UHF SPLITER
S996 ANTENNA SWITCH
VHF SPLITER
VTR: RF SIGNAL IS INPUT FROM MODULATOR
TO YC-22 BOARD (RF MODULATOR)
3-1 1-1
UHF/VHF TUNER BT-864
TA-12 BOARD (VIF,SIF,AFC,AUDIO RECORD/PLAY BACK PROCESS,CHANNEL PRESET)
TP2
TP1
TP3
Q003 2SC2785 PHASE COMP
Q004 2SA1048 BUFFER
Q007 2SK43-2 AFT WIDTH SWITCH
Q008 2SA1048 BAND SELECT SW
Q009 2SA1048 BAND SELECT SW
Q010 2SA1048 BAND SELECT SW
D007-009 1SS119
IC001 CX885B VIF/SIF
VIDEO AMP
IF AGC
ANC
VIDEO DET
SIF AMP
SIF LIMITER
LIMITER
VIF AMP
RF AGC
DC AMP
PHASE DET
VOLUME CONTROL
FM DET
SF001 FI0320
T001 VIF
T002 VIF
T003
T004 AFT
T005
CF001 4.5MHz TRAP
CF002 4.5MHz BPF
CF003 4.5MHz TRAP
UHF RF AGC
VHF RF AGC
D001,002 1SS119
Q001 2SC2785 AFT BUFFER
Q002 2SC2785 MUTING
TO PS-19 BOARD CN4
3-2 4-1
CN001 (BLK)
UNSWITCHED 45V
UNSWITCHED -12V
SWITCHED 12V
GND
GND
LED 12V
TS-23 (1/2) BOARD (TIMER CONTROL, CHANNEL SWITCH)
D101-D107 SG213T
D108-D114 SG213T
S101 CHANNEL SWITCH
CN002 (YEL)
CN003 (RED)
CN004 (BLK)
CN005 (WHT)
IC002 μPC574J 33V REG
PS001 PRESET BLOCK
D003,004 1SS119 MUTE/AFT OFF
S001 AFT
OFF: WHEN REMOVE THE PRESET COVER
D005,006 1SS119
Q006 2SC2785
Q005 2SA1048
AFT DEFEAT/AUDIO MUTE
0.2SEC

A-12 BOARD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

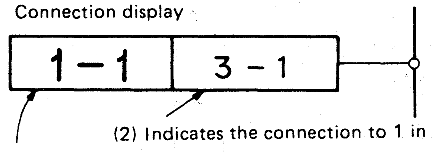

2 BOARD
AFC,AUDIO RECORD/PLAY BACK PROCESS,CHANNEL PRESET)
Q003 2SC2785 PHASE COMP
Q004 2SA1048 BUFFER
TP1
TP2
TP3
IC001 CX885B VIF/SIF
VIDEO AMP
IF AGC
ANC
VIDEO DET
SIF AMP
SIF LIMITER
LIMITER
FM DET
VIF AMP
RF AGC
DC AMP
PHASE DET
VOLUME CONTROL
Q007 2SK43-2 AFT WIDTH SWITCH
SF001 F1032G
T001 VIF
T002 VIF
T003
T004 AFT
T005
UHF RF AGC
VHF RF AGC
D001,002 1SS119
Q001 2SC2785 AFT BUFFER
Q002 2SC2785 MUTING
D003,004 1SS119 MUTE/AFT OFF
D005,006 1SS119
S001 AFT
ON OFF
6.1: AFT OFF
0: AFT ON
OFF: WHEN REMOVE THE PRESET COVER
Q006 2SC2785
Q005 2SA1048
AFT DEFEAT/AUDIO MUTE
PS001 PRESET BLOCK
A B C D E F G
H I J K L M N
VH VL U
IC002 μPC574J 33V REG
Q507 2SC2785 βIII REC EQ
Q510 2SC2785 AGC SWITCH
PB 12V
AUDIO MUTE
TP507
TP506
TP503
IC501 LA7046 AUDIO REC/PB AMP
AGC
LOGIC CONTROL
MUTING CONTROL
REC AMP
AGC DETECTOR
MIC AMP
REC
PB
EQ AMP
LINE AMP
GND
BIAS TRAP
PB EQ
PB F CHARACTERISTIC
Q509 2SC2785 βIII HIGH FREQUENCY COMPENSATION
TP505 TP504
Q505 2SA1048 PB EQ SWITCH
D502 1SS119
D501 1SS119
BIAS CURRENT
TP502
TP501
Q501 2SD774 BIAS/ERASE OSC
Q502,Q503 2SC945 REC BIAS CUT
Q504 2SA1048 REC/PB SWITCH
Q506 2SC2785 REC/PB SWITCH
JK-1 (1/2) BOARD (INPUT JACK)
TO YC-22 BOARD CN4
3-5 1-2
CNJ003 VIDEO IN
CNJ001 AUDIO IN
CNJ002 MIC
CN502 (WHT)
9 VIDEO OUT (X)
8 VIDEO OUT (Y)
7 TU AUDIO OUT (X)
6 AUDIO GND
5 MIC IN (X)
4 MIC IN (Y)
3
2
1
TO SS-13 BOARD CN412
2-3 3-4
CN501 (BLK)
1 PB 12V IN
2 REC PAUSE 12V
3 AUDIO MUTE
4 βIII SIG
0: REC. PAUSE
TO YC-22 BOARD CN6
1-4 3-3
CN503 (BLK)
1 AUDIO OUT (X)
2 AUDIO OUT (Y)
170Ω (DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED)
CN504 (WHT)
5 AUDIO HEAD (G)
4 AUDIO HEAD (Y)
3 AUDIO HEAD (X)
2 ERAS HEAD (X)
1 ERAS HEAD (G)
6Ω (DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED)
AUDIO REC/PB HEAD
FULL ERASE HEAD
AUDIO ERASE HEAD

NO MARK : βIII REC/PB MODE
( ) : βIII PB MODE
[ ] : βIII REC MODE
▭ : UNSWITCHED VOLTAGE


T
U
V
W
X
Y
Z
A1
JK-1(1/2)BOARD
(INPUT JACK)
TO YC-22 BOARD
CN4
3-5
1-2
CNJ003
VIDEO IN
R004
75
C001
0.047
CNJ001
AUDIO IN
R002
68k
R005
47
CNJ002
MIC
R003
220
CN502 (WHT)
9 VIDEO OUT(X) WHT
8 VIDEO OUT(Y) WHT
7 TU AUDIO OUT(X) WHT
6 AUDIO GND RED
5 MIC IN(X) WHT
4 MIC IN(Y) BLK
3 WHT
2 —
1
Q510
2SC2785
AGC SWITCH
PB 12V
AUDIO MUTE
TP507
TP506
R524
10k
C528
0.01
C530
220
(1/4W)
6.3V
R535
390
C522
0.15
C520
510p
C523
4.7/25V
L502
22mH
R538
3.3M
RV504
10k
R540
6.8k
REC EQ
C534
0.47/50V
R541
47k
REC AMP
AGC DETECTOR
AGC
LINE AMP
GND
R531
22k
R546
22k
C524
100
16V
R525
33k
R529
10
C531
1/50V
C533
560p
C535
22/16V
R536
3.6k
R512
1M
R537
220
(8.9)
[0.2]
D501
1SS119
D502
1SS119
CN501 (BLK)
1 PB 12V IN
2 REC·PAUSE 12V WHT
3 AUDIO MUTE WHT
4 βIII SIG WHT
(11.9)
[0]
(11.6: βIII
0: βII)
(0)
[11
0: REC. PAUSE]
TO SS-13 BOARD
CN412
2-3
3-4
CN503 (BLK)
1 AUDIO OUT(X) WHT
2 AUDIO OUT(Y) WHT
TO YC-22 BOARD
CN6
1-4
3-3
170 Ω
(DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED)
CN504 (WHT)
5 AUDIO HEAD(G) BLU
4 AUDIO HEAD(Y) RED
3 AUDIO HEAD(X) WHT
2 ERAS HEAD(X) WHT
1 ERAS HEAD(G) RED
6 Ω
(DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED)
AUDIO REC/PB HEAD
FULL ERASE HEAD
AUDIO ERASE HEAD
R528
1k
R510
2.2k
R511
2.2k
R522
2.2k
R514
56k
R515
10k
R519
39k
R520
3.3k
R533
82k
R534
27k
Q504
Q506
Q502,Q503
2SC945
BIAS CUT
Q504
2SA1048
REC/PB SWITCH
Q506
2SC2785
REC/PB SWITCH
NO MARK : βIII REC/PB MODE
( ) : βIII PB MODE
[ ] : βIII REC MODE
▭ : UNSWITCHED VOLTAGE

NOTES:

- Connection display



(2) Indicates the connection to 1 in Fig. 3.

(1) Indicates No.1 in Fig. 1.

Fig. 1 . . . . . . Video block
Fig. 2 . . . . . . Servo/system control block
Fig. 3 . . . . . . Tuner/audio block
Fig. 4 . . . . . . Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- — : B + bus.
- - - : B – bus.

(▭ : Unswitched)

- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

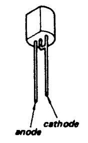
The voltage value is measured using a digital tester (10MΩ/V).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

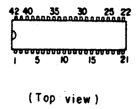
TA-20 (VIF, SIF, AFT, AGC) **TU-54** (TUNER) **TS-23** (TIMER, CHANNEL SWITCH)

µPC574J



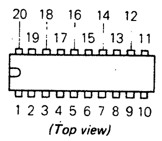
anode
cathode

CX885B



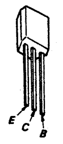
42 40 35 30 25 22
1 5 10 15 21
(Top view)

LA7046

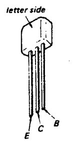


20 18 16 14 12
19 17 15 13 11
1 2 3 4 5 6 7 8 9 10
(Top view)

2SA1048-GR
2SA1115
2SC2458
2SC2603

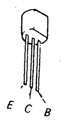


2SA1175
2SC2785

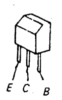


letter side
E C B

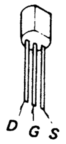
2SC945



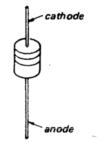
2SD773
2SD774



2SK108

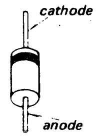


1SS119
1SS148



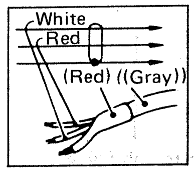
cathode
anode

1SS133
RD9.1EB1



cathode
anode

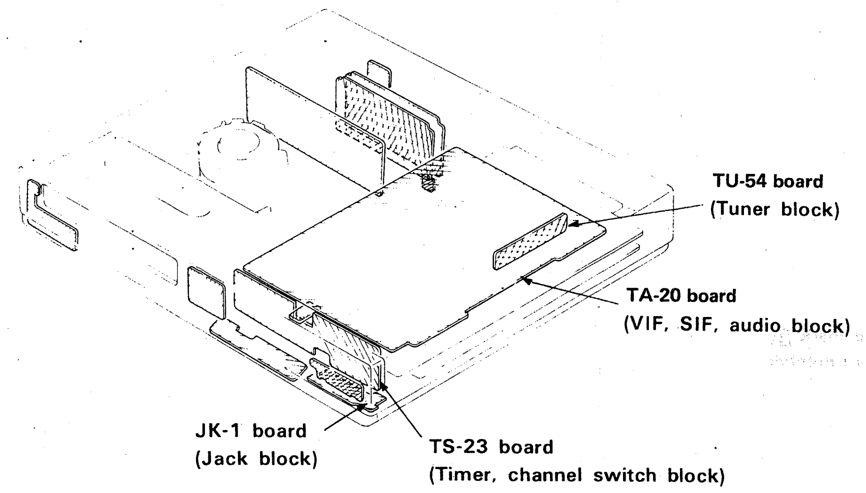
- Color code of sleeving over the end of the jacket.



White
Red
(Red) ((Gray))

- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ▨ Soldering side
- ░ B + pattern
- ⬚← indicates side identified with part number.
- Ⓕ : fusible resistor
- ▲ : nonflammble resistor

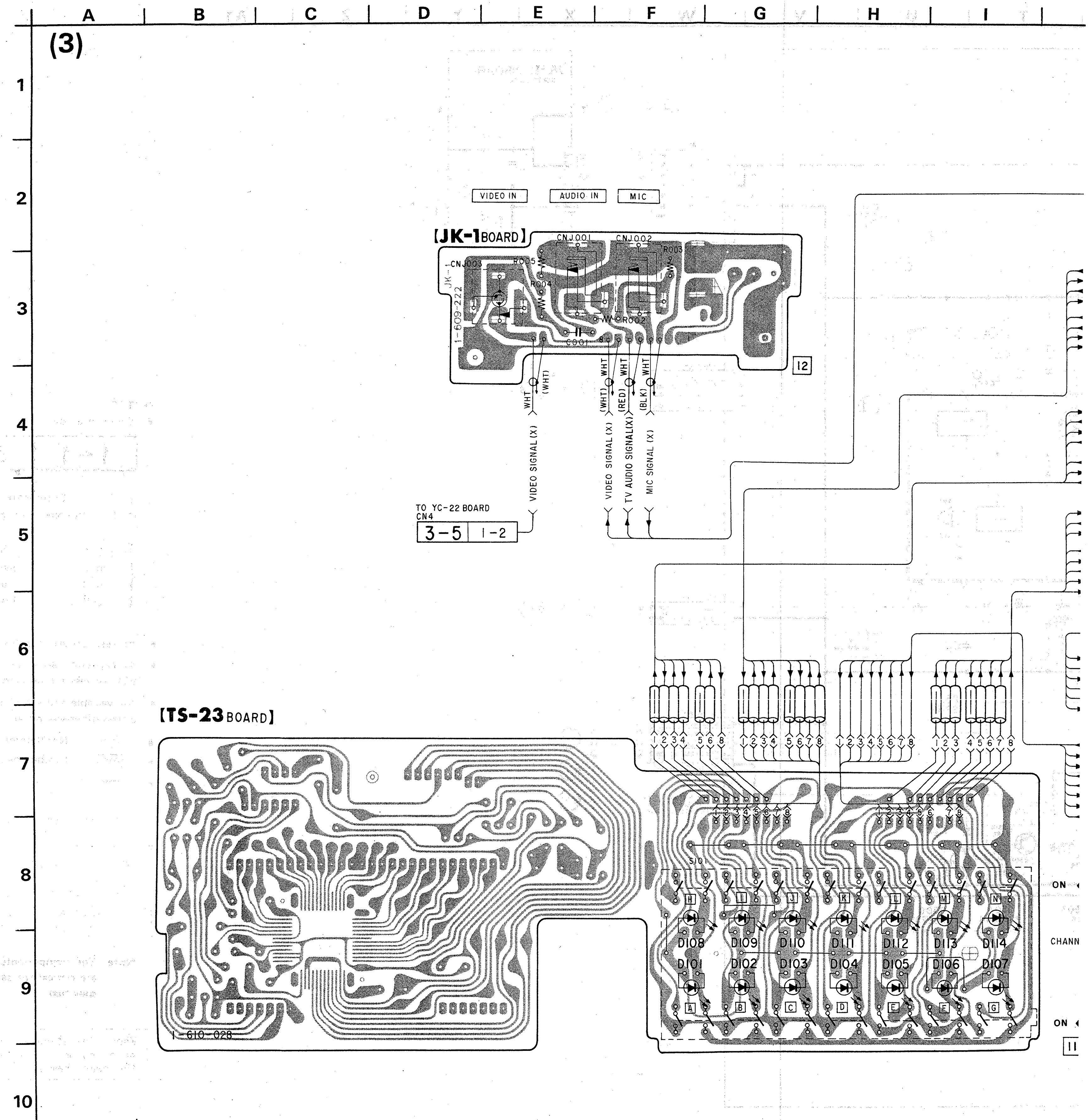
[BOARD ARRANGENENT]



TU-54 board
(Tuner block)
TA-20 board
(VIF, SIF, audio block)
JK-1 board
(Jack block)
TS-23 board
(Timer, channel switch block)

JK-1 (JACK SWITCH)

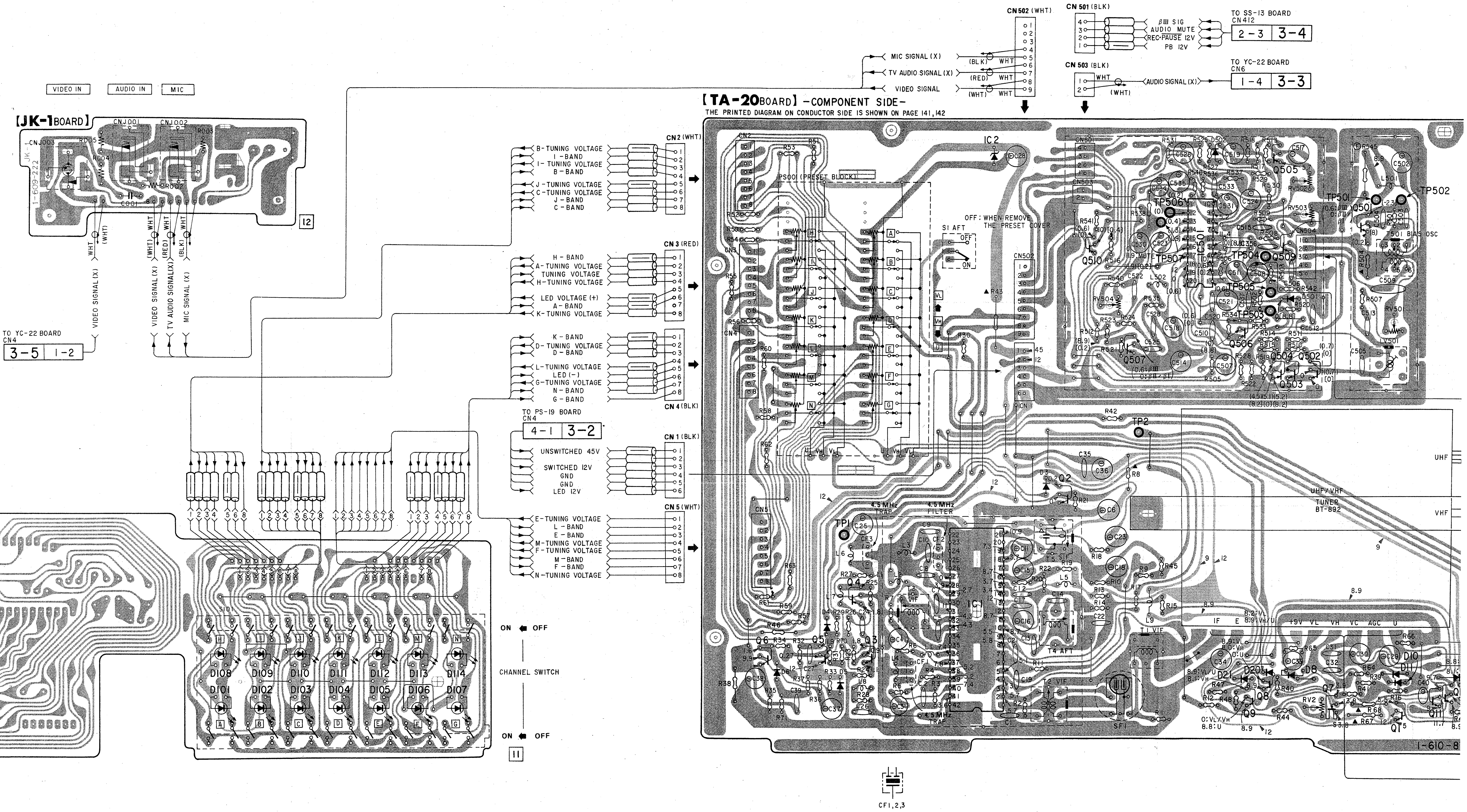
– Ref. No. TA-12 BOARD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

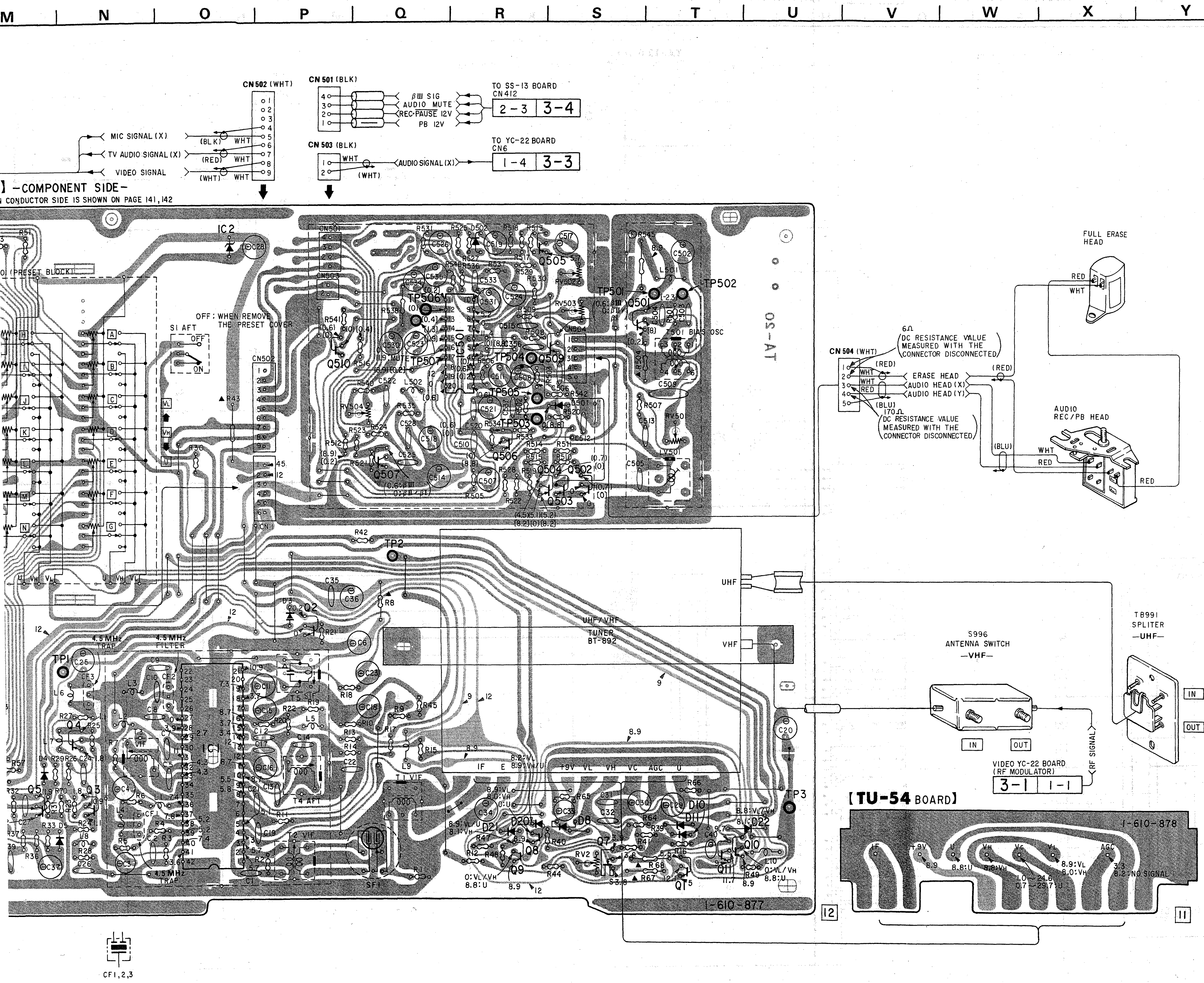


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
(3)
VIDEO IN
AUDIO IN
MIC
[JK-1 BOARD]
CNJ001
CNJ002
CNJ003
R003
R005
R004
R002
C001
JK-1
1-609-222
12
WHT
(WHT)
WHT
WHT
WHT
(WHT)
(RED)
(BLK)
VIDEO SIGNAL (X)
VIDEO SIGNAL (X)
TV AUDIO SIGNAL(X)
MIC SIGNAL (X)
TO YC-22 BOARD
CN4
3-5
1-2
[TS-23 BOARD]
1 2 3 4 5 6 8
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8
S101
H
I
J
K
L
M
N
D108
D109
D110
D111
D112
D113
D114
D101
D102
D103
D104
D105
D106
D107
A
B
C
D
E
F
G
1-610-028
ON
CHANN
ON
11

RD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T

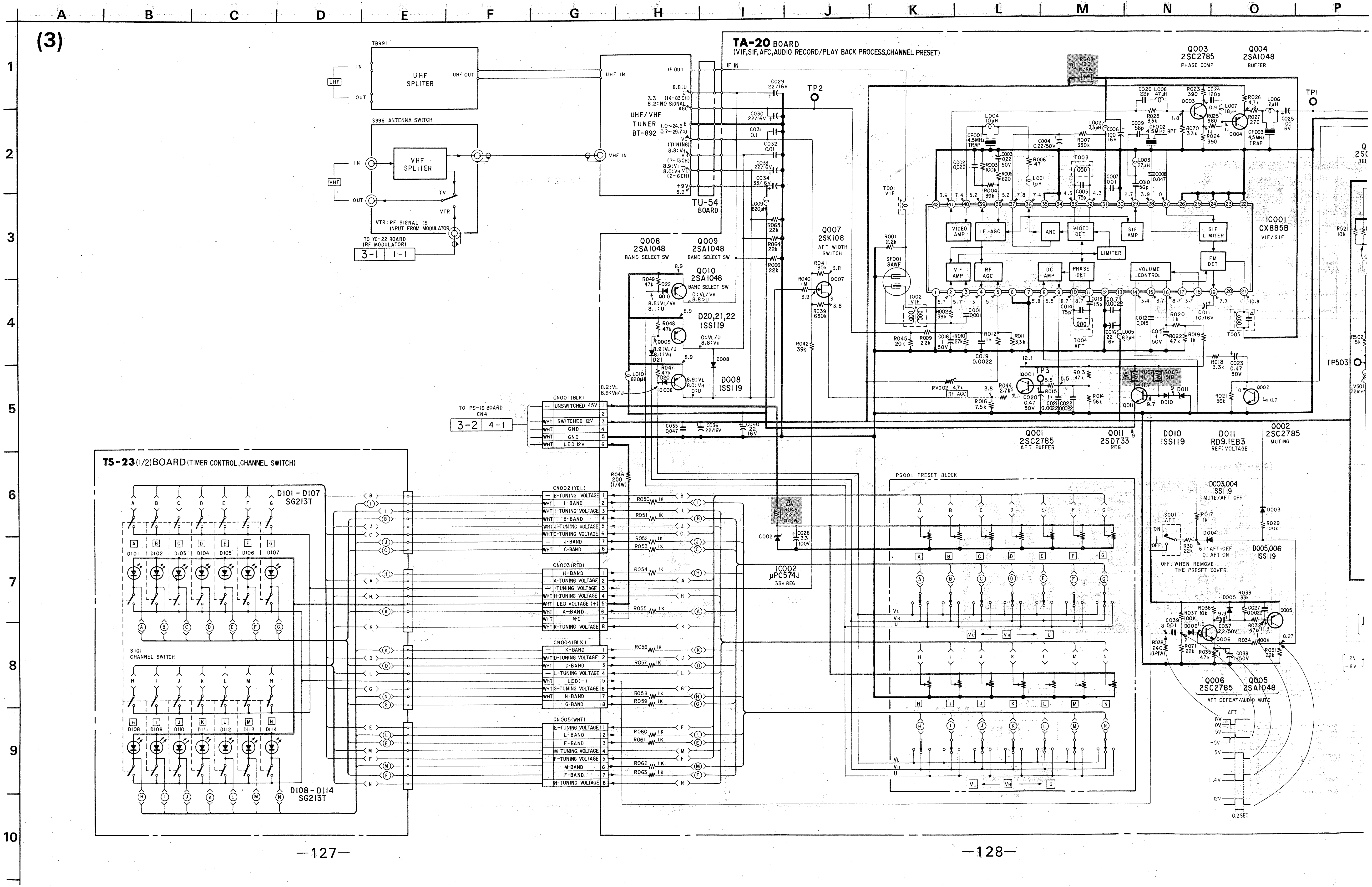

VIDEO IN
AUDIO IN
MIC
【JK-1BOARD】
CNJ001
CNJ002
CNJ003
R003
R004
R005
C001
RJ002
1-609-222
12
WHT
(WHT)
(RED)
(BLK)
VIDEO SIGNAL (X)
VIDEO SIGNAL (X)
TV AUDIO SIGNAL(X)
MIC SIGNAL (X)
TO YC-22 BOARD CN4
3-5 1-2
B-TUNING VOLTAGE
I-BAND
I-TUNING VOLTAGE
B-BAND
J-TUNING VOLTAGE
C-TUNING VOLTAGE
J-BAND
C-BAND
CN2 (WHT)
H-BAND
A-TUNING VOLTAGE
TUNING VOLTAGE
H-TUNING VOLTAGE
LED VOLTAGE (+)
A-BAND
K-TUNING VOLTAGE
CN3 (RED)
K-BAND
D-TUNING VOLTAGE
D-BAND
L-TUNING VOLTAGE
LED (-)
G-TUNING VOLTAGE
N-BAND
G-BAND
CN4 (BLK)
TO PS-19 BOARD CN4
4-1 3-2
UNSWITCHED 45V
SWITCHED 12V
GND
GND
LED 12V
CN1 (BLK)
E-TUNING VOLTAGE
L-BAND
E-BAND
M-TUNING VOLTAGE
F-TUNING VOLTAGE
M-BAND
F-BAND
N-TUNING VOLTAGE
CN5 (WHT)
S101
D101 D102 D103 D104 D105 D106 D107
D108 D109 D110 D111 D112 D113 D114
ON OFF
CHANNEL SWITCH
ON OFF
11
CN502 (WHT)
MIC SIGNAL (X)
TV AUDIO SIGNAL (X)
VIDEO SIGNAL
(BLK) WHT
(RED) WHT
(WHT) WHT
CN501 (BLK)
βIII SIG
AUDIO MUTE
REC·PAUSE 12V
PB 12V
TO SS-13 BOARD CN412
2-3 3-4
CN503 (BLK)
WHT
(WHT)
AUDIO SIGNAL (X)
TO YC-22 BOARD CN6
1-4 3-3
【TA-20BOARD】-COMPONENT SIDE-
THE PRINTED DIAGRAM ON CONDUCTOR SIDE IS SHOWN ON PAGE 141, 142
PS001 (PRESET BLOCK)
OFF: WHEN REMOVE THE PRESET COVER
S1 AFT
OFF
ON
IC2
IC1
TP1
TP2
TP501
TP502
TP503
TP504
TP505
TP506
TP507
Q501 Q502 Q503 Q504 Q505 Q506 Q507 Q508 Q509 Q510
T501 BIAS OSC
L501
RV501 RV502 RV503 RV504
CN501
CN503
CN504
4.5MHz TRAP
4.5MHz FILTER
4.5MHz TRAP
T4 AFT
T2 VIF
T5 SIF
T1 VIF
SF1
UHF
VHF
UHF/VHF TUNER BT-892
IF E 8.9:VH/U
+9V VL VH VC AGC U
D1 D2 D3 D4 D8 D10 D11 D20 D21
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q11
RV1 RV2
1-610-8
CF1,2,3

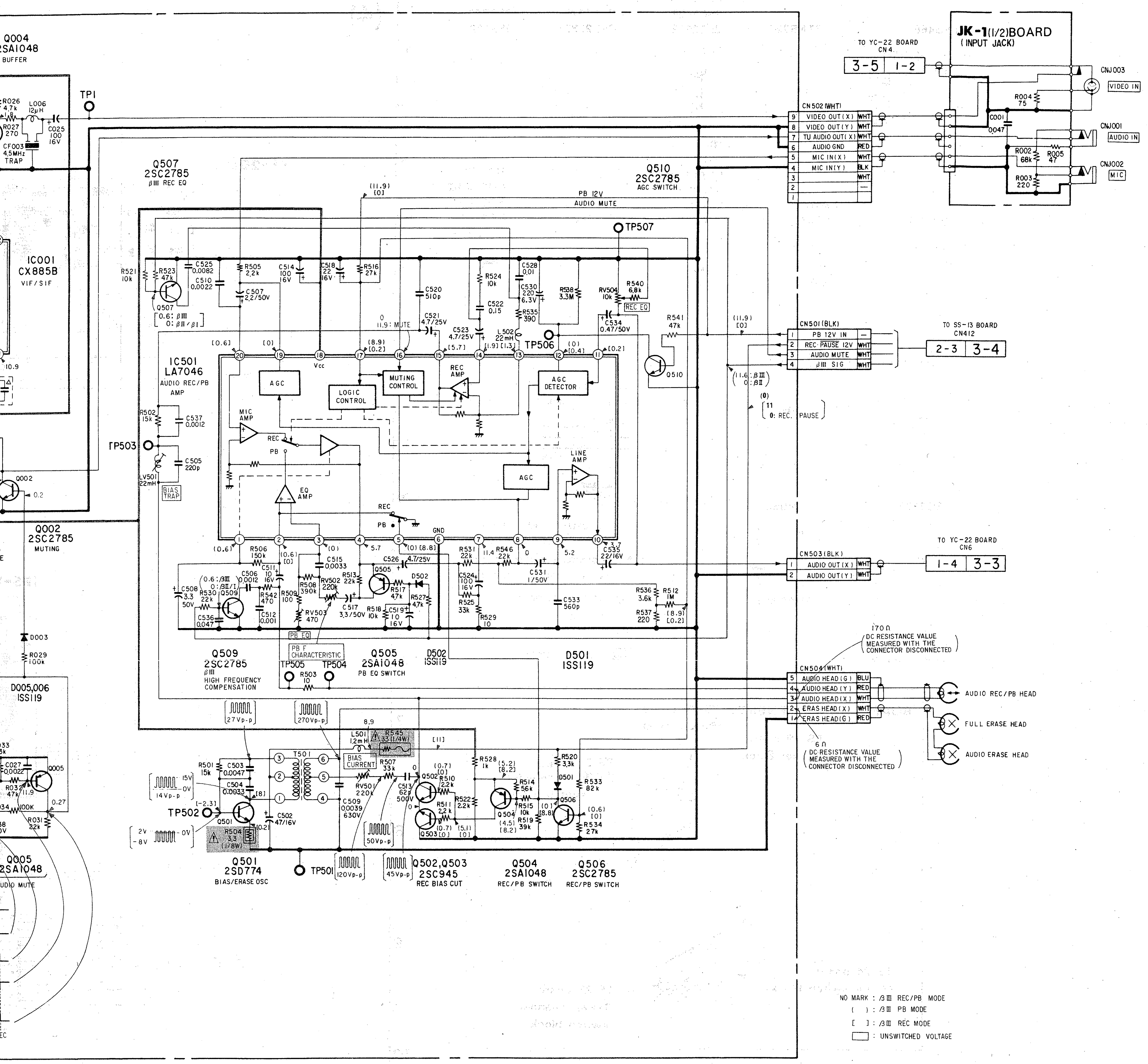

M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
A1
B1
CN502 (WHT)
CN501 (BLK)
βIII SIG
AUDIO MUTE
REC·PAUSE 12V
PB 12V
TO SS-13 BOARD CN412
2-3
3-4
CN503 (BLK)
AUDIO SIGNAL (X)
TO YC-22 BOARD CN6
1-4
3-3
MIC SIGNAL (X)
TV AUDIO SIGNAL (X)
VIDEO SIGNAL
] -COMPONENT SIDE-
CONDUCTOR SIDE IS SHOWN ON PAGE 141, 142
(PRESET BLOCK)
OFF: WHEN REMOVE THE PRESET COVER
S1 AFT
OS-AT
TP501
TP502
TP504
TP505
TP506
TP507
TP503
T501 BIAS OSC
CN504 (WHT)
6Ω DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED
ERASE HEAD
AUDIO HEAD (X)
AUDIO HEAD (Y)
170Ω DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED
FULL ERASE HEAD
AUDIO REC/PB HEAD
UHF
VHF
UHF/VHF TUNER BT-892
TP2
TP1
TP3
4.5MHz TRAP
4.5MHz FILTER
S996 ANTENNA SWITCH -VHF-
TB991 SPLITER -UHF-
IN
OUT
VIDEO YC-22 BOARD (RF MODULATOR)
3-1
1-1
(RF SIGNAL)
[TU-54 BOARD]
1-610-878
1-610-877
12
11
CF1,2,3

Q,IC	D	TP,RV
IC2 508 505	502	
		RV502
		501,502 506 507 RV503
501 IC501 509 510		504
	501	505 RV504 503 RV501
506 507 504,503,502		LV501
		2
2	3	
		1
4 IC 1		
	4	
6 5,3 8 11 10 9,7 1	21 20 8 6 11 22 10 5	3 RV2

TA-20 (VIF, SIF, AFT, AGC) **TU-54** (TUNER) **TS-23** (TIMER, CHANNEL SWITCH) **JK-1** (JACK SWITCH) – Ref. No. TA-12 BOARD: 6000 series, TS-23 BOARD: 8000 series, JK-1 BOARD: 9000 series –

(3)

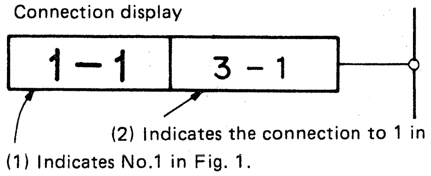

A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
TB991
UHF SPLITER
S996 ANTENNA SWITCH
VHF SPLITER
VTR: RF SIGNAL IS INPUT FROM MODULATOR
TO YC-22 BOARD (RF MODULATOR)
3-1 1-1
UHF/VHF TUNER BT-892
TU-54 BOARD
TA-20 BOARD (VIF,SIF,AFC,AUDIO RECORD/PLAY BACK PROCESS,CHANNEL PRESET)
TP1
TP2
TP3
Q003 2SC2785 PHASE COMP
Q004 2SA1048 BUFFER
IC001 CX885B VIF/SIF
VIDEO AMP
IF AGC
ANC
VIDEO DET
SIF AMP
SIF LIMITER
LIMITER
FM DET
VIF AMP
RF AGC
DC AMP
PHASE DET
VOLUME CONTROL
SF001 SAWF
Q007 2SK108 AFT WIDTH SWITCH
Q008 2SA1048 BAND SELECT SW
Q009 2SA1048 BAND SELECT SW
Q010 2SA1048 BAND SELECT SW
D20,21,22 1SS119
D008 1SS119
TO PS-19 BOARD CN4
3-2 4-1
CN001 (BLK)
UNSWITCHED 45V
SWITCHED 12V
GND
GND
LED 12V
Q001 2SC2785 AFT BUFFER
Q011 2SD733 REG
D010 1SS119
D011 RD9.1EB3 REF. VOLTAGE
Q002 2SC2785 MUTING
D003,004 1SS119 MUTE/AFT OFF
S001 AFT
OFF: WHEN REMOVE THE PRESET COVER
D005,006 1SS119
Q006 2SC2785
Q005 2SA1048
AFT DEFEAT/AUDIO MUTE
IC002 μPC574J 33V REG
PS001 PRESET BLOCK
TS-23 (1/2) BOARD (TIMER CONTROL, CHANNEL SWITCH)
D101 - D107 SG213T
S101 CHANNEL SWITCH
D108 - D114 SG213T
CN002 (YEL)
B-TUNING VOLTAGE
I-BAND
I-TUNING VOLTAGE
B-BAND
J-TUNING VOLTAGE
C-TUNING VOLTAGE
J-BAND
C-BAND
CN003 (RED)
H-BAND
A-TUNING VOLTAGE
TUNING VOLTAGE
H-TUNING VOLTAGE
LED VOLTAGE (+)
A-BAND
N-C
K-TUNING VOLTAGE
CN004 (BLK)
K-BAND
D-TUNING VOLTAGE
D-BAND
L-TUNING VOLTAGE
LED(-)
G-TUNING VOLTAGE
N-BAND
G-BAND
CN005 (WHT)
E-TUNING VOLTAGE
L-BAND
E-BAND
M-TUNING VOLTAGE
F-TUNING VOLTAGE
M-BAND
F-BAND
N-TUNING VOLTAGE


O
P
Q
R
S
T
U
V
W
X
Y
Z
A1
Q004
2SA1048
BUFFER
TP1
L006 12μH
CF003 4.5MHz TRAP
IC001
CX885B
VIF/SIF
Q002
2SC2785
MUTING
D003
R029 100k
D005,006
ISS119
Q005
2SA1048
AUDIO MUTE
Q507
2SC2785
βIII REC EQ
Q510
2SC2785
AGC SWITCH
PB 12V
AUDIO MUTE
TP507
IC501
LA7046
AUDIO REC/PB AMP
AGC
LOGIC CONTROL
MUTING CONTROL
REC AMP
AGC DETECTOR
MIC AMP
EQ AMP
LINE AMP
REC
PB
GND
Vcc
TP503
TP506
BIAS TRAP
Q509
2SC2785
βIII
HIGH FREQUENCY COMPENSATION
PB EQ
PB F CHARACTERISTIC
TP505
TP504
Q505
2SA1048
PB EQ SWITCH
D502
ISS119
D501
ISS119
T501
L501 12mH
R545 33 (1/4W)
BIAS CURRENT
RV501 220k
TP502
Q501
2SD774
BIAS/ERASE OSC
R504 3.3 (1/8W)
TP501
Q502,Q503
2SC945
REC BIAS CUT
Q504
2SA1048
REC/PB SWITCH
Q506
2SC2785
REC/PB SWITCH
27Vp-p
270Vp-p
14Vp-p
50Vp-p
120Vp-p
45Vp-p
TO YC-22 BOARD CN4
3-5
1-2
JK-1 (1/2) BOARD
(INPUT JACK)
CNJ003
VIDEO IN
CNJ001
AUDIO IN
CNJ002
MIC
CN502 (WHT)
VIDEO OUT (X)
VIDEO OUT (Y)
TU AUDIO OUT (X)
AUDIO GND
MIC IN (X)
MIC IN (Y)
CN501 (BLK)
PB 12V IN
REC PAUSE 12V
AUDIO MUTE
βIII SIG
TO SS-13 BOARD CN412
2-3
3-4
CN503 (BLK)
AUDIO OUT (X)
AUDIO OUT (Y)
TO YC-22 BOARD CN6
1-4
3-3
CN504 (WHT)
AUDIO HEAD (G)
AUDIO HEAD (Y)
AUDIO HEAD (X)
ERAS HEAD (X)
ERAS HEAD (G)
170Ω DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED
6Ω DC RESISTANCE VALUE MEASURED WITH THE CONNECTOR DISCONNECTED
AUDIO REC/PB HEAD
FULL ERASE HEAD
AUDIO ERASE HEAD

NO MARK : βIII REC/PB MODE
( ) : βIII PB MODE
[ ] : βIII REC MODE
▭ : UNSWITCHED VOLTAGE

NOTES:

- Connection display



(2) Indicates the connection to 1 in Fig. 3.
(1) Indicates No.1 in Fig. 1.

Fig. 1 . . . . . . Video block
Fig. 2 . . . . . . Servo/system control block
Fig. 3 . . . . . . Tuner/audio block
Fig. 4 . . . . . . Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▨ : Nonflammable resistor
- ⏛ : Fusible resistor
- △ : internal component
- ━ : B + bus.
- (▭ : Unswitched)
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

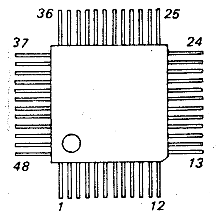
The voltage value is measured using a digital tester (10MΩ/V).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

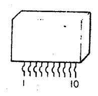
When indicating parts by reference number, please include the board name.

PS-19 (LINE FILTER) **PS-20** (POWER SUPPLY) **PS-21** (50 Hz/60 Hz TIMER SELECT SWITCH) **TS-23** (TIMER, CHANNEL SWITCH) **TS-24** (TIMER SWITCH) – Ref. No. PS-19 BOARD: 7000 series, PS-20 BOAR

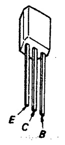
LR3466


36
25
37
24
48
13
1
12

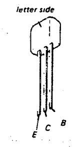
STK5324



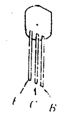
2SA1048
2SA1115
2SC2458
2SC2603



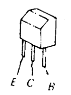
2SA1175
2SC2785


letter side
E
C
B

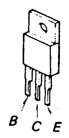
2SA772
2SB739



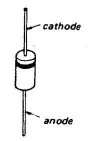
2SB733



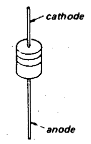
2SC1061
2SD313HP



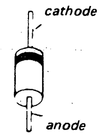
10E1
10E2
ERB12-02RK
GP08D
S3V40
S3V10F


cathode
anode

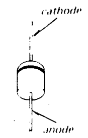
1SS119
1SS148


cathode
anode

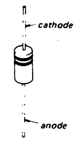
1SS133
RD5.1EB2
RD11EB2
RD11EB3


cathode
anode

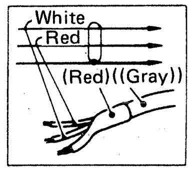
ERC01-02FL


cathode
anode

SIB01-02

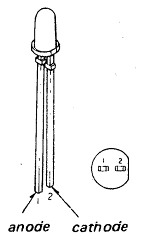

cathode
anode

- Color code of sleeving over the end of the jacket.

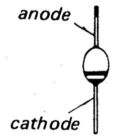

White
Red
(Red)((Gray))

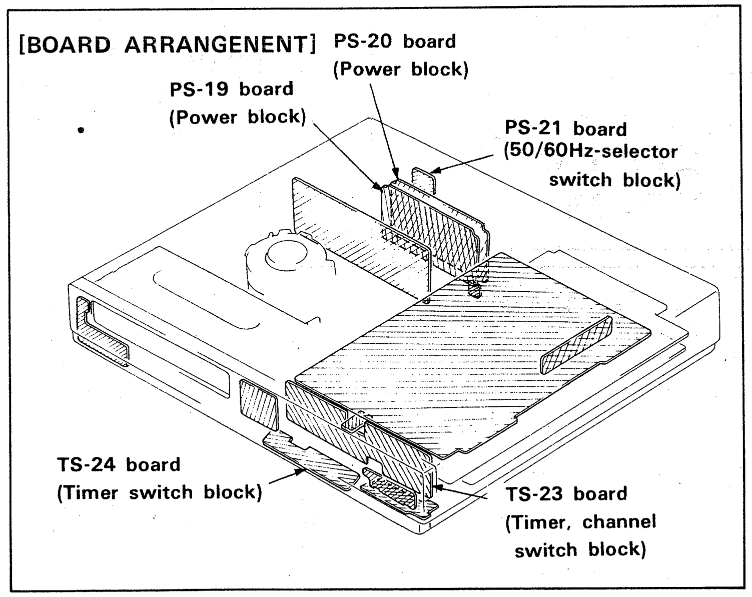
- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ▨ Soldering side
- ▨ B + pattern
- ▨ B − pattern
- ▨ Timer IC ground

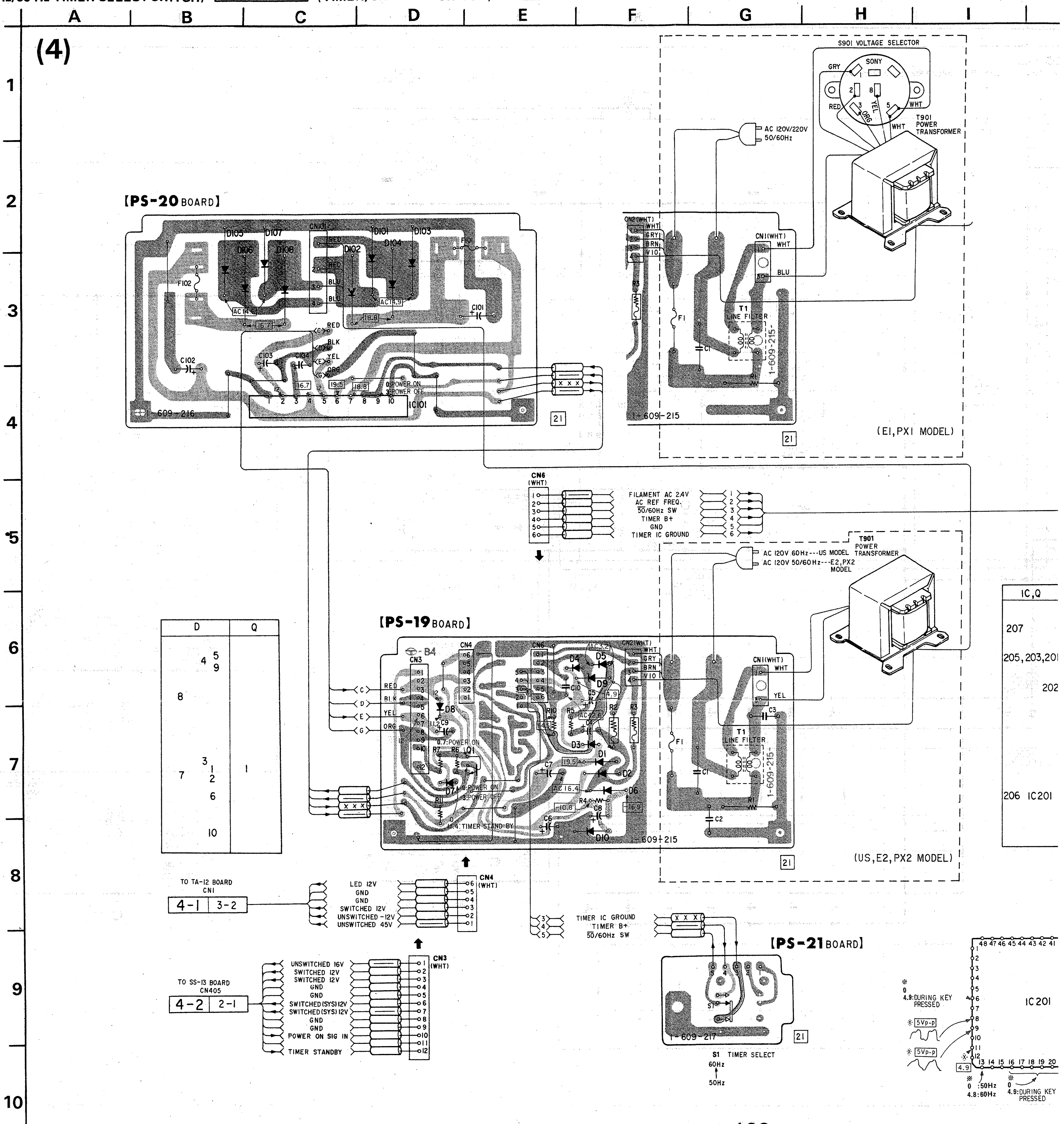
SG213T


1
2
anode
cathode

V06C


anode
cathode

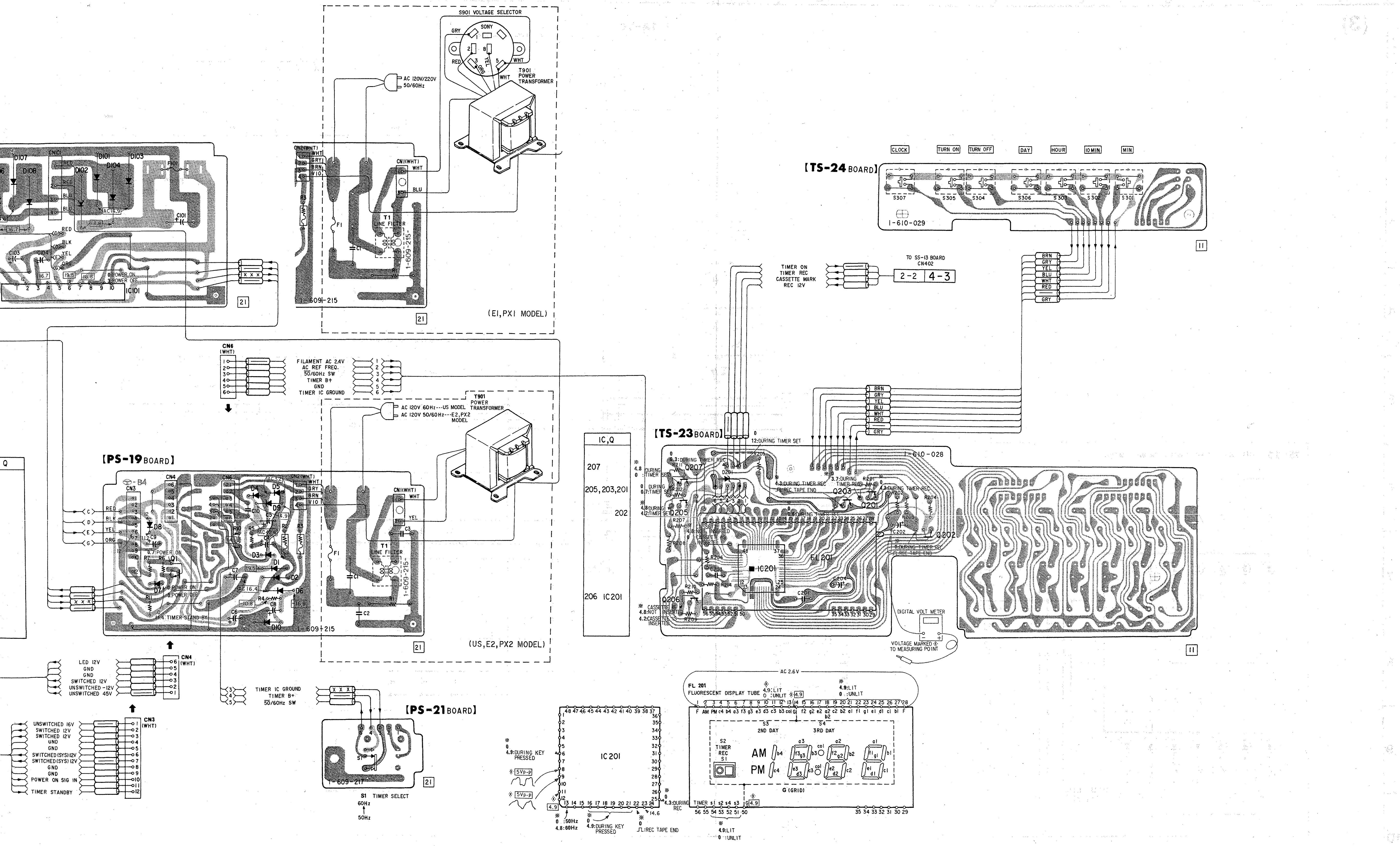

[BOARD ARRANGENENT]
PS-20 board
(Power block)
PS-19 board
(Power block)
PS-21 board
(50/60Hz-selector
switch block)
TS-24 board
(Timer switch block)
TS-23 board
(Timer, channel
switch block)


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
(4)
S901 VOLTAGE SELECTOR
SONY
GRY
RED
WHT
ORG
YEL
T901
POWER
TRANSFORMER
AC 120V/220V
50/60Hz
[PS-20 BOARD]
D105
D107
D106
D108
CN101
D101
D103
D102
D104
F101
F102
AC14.9
AC14.9
16.7
18.8
C101
RED
BLK
YEL
ORG
C103
C104
C102
16.7
19.5
18.8
1:POWER ON
0:POWER OFF
IC101
1-609-216
21
CN2(WHT)
WHT
GRY
BRN
VIO
CN1(WHT)
WHT
BLU
T1
LINE FILTER
F1
C1
1-609-215
1-609-215
21
(EI,PXI MODEL)
CN6
(WHT)
FILAMENT AC 2.4V
AC REF FREQ.
50/60Hz SW
TIMER B+
GND
TIMER IC GROUND
T901
POWER
TRANSFORMER
AC 120V 60Hz---US MODEL
AC 120V 50/60Hz---E2,PX2
MODEL
[PS-19 BOARD]
B4
CN3
CN4
CN6
D4
D5
D9
D8
D7
D1
D2
D3
D6
D10
Q1
C7
C8
C9
C10
8.7:POWER ON
0:POWER ON
TIMER STAND BY
CN2(WHT)
WHT
GRY
BRN
VIO
CN1(WHT)
WHT
YEL
C3
T1
LINE FILTER
F1
C1
C2
1-609-215
1-609-215
21
(US,E2,PX2 MODEL)
TO TA-12 BOARD
CN1
4-1
3-2
LED 12V
GND
GND
SWITCHED 12V
UNSWITCHED -12V
UNSWITCHED 45V
CN4
(WHT)
TO SS-13 BOARD
CN405
4-2
2-1
UNSWITCHED 16V
SWITCHED 12V
SWITCHED 12V
GND
GND
SWITCHED (SYS) 12V
SWITCHED (SYS) 12V
GND
GND
POWER ON SIG IN
TIMER STANDBY
CN3
(WHT)
TIMER IC GROUND
TIMER B+
50/60Hz SW
[PS-21 BOARD]
S1
1-609-217
21
S1 TIMER SELECT
60Hz
50Hz
IC,Q
207
205,203,20
202
206 IC201
※
0
4.9:DURING KEY PRESSED
5Vp-p
5Vp-p
4.9
IC201
0 :50Hz
4.8:60Hz
0
4.9:DURING KEY PRESSED

D		Q
	4 5 9	
8		
7	3 1 2 6 10	1

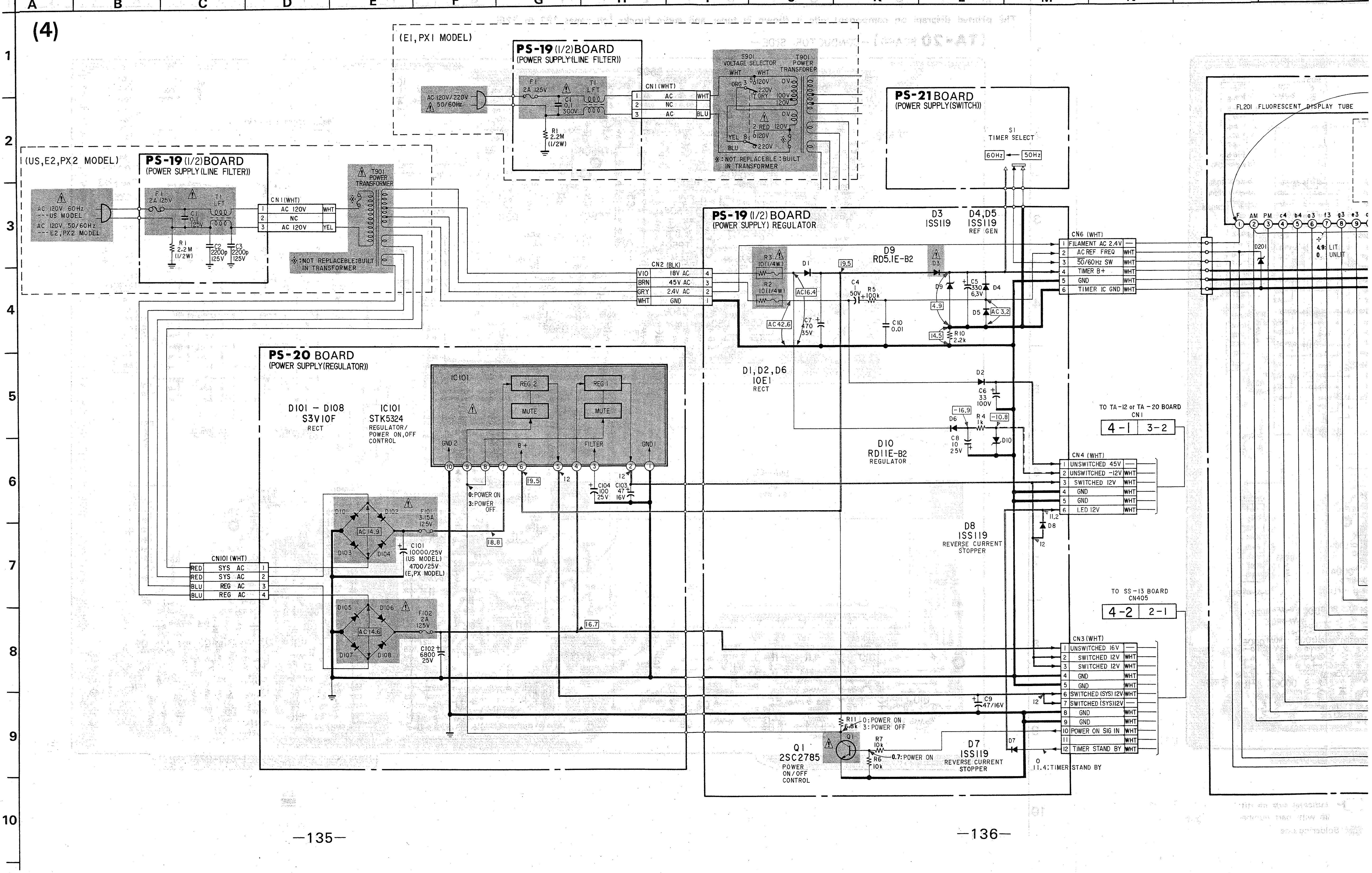
S-23 (TIMER, CHANNEL SWITCH) **TS-24** (TIMER SWITCH) – Ref. No. PS-19 BOARD: 7000 series, PS-20 BOARD: 7100 series, PS-21 BOARD: 7300 series, TS-23 BOARD: 8000 series, TS-24 BOARD: 8300 series –

C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R

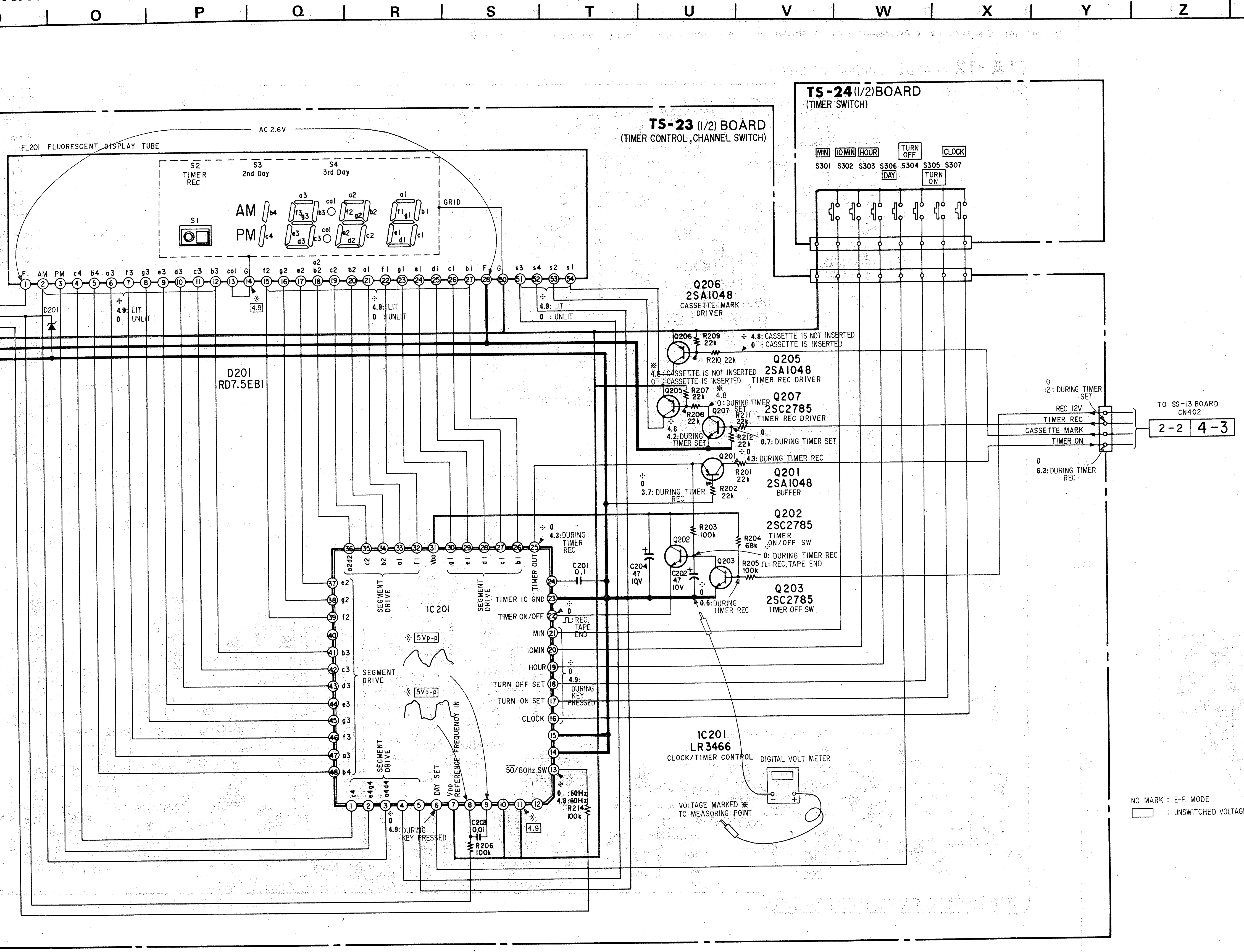

S901 VOLTAGE SELECTOR
SONY
AC 120V/220V 50/60Hz
T901 POWER TRANSFORMER
T1 LINE FILTER
1-609-215
(EI,PX1 MODEL)
CN6 (WHT)
FILAMENT AC 2.4V
AC REF FREQ.
50/60Hz SW
TIMER B+
GND
TIMER IC GROUND
AC 120V 60Hz---US MODEL
AC 120V 50/60Hz---E2,PX2 MODEL
(US,E2,PX2 MODEL)
[PS-19 BOARD]
POWER ON
POWER OFF
TIMER STAND BY
CN4 (WHT)
LED 12V
GND
SWITCHED 12V
UNSWITCHED -12V
UNSWITCHED 45V
CN3 (WHT)
UNSWITCHED 16V
SWITCHED 12V
SWITCHED(SYS)12V
POWER ON SIG IN
TIMER STANDBY
TIMER IC GROUND
TIMER B+
50/60Hz SW
[PS-21 BOARD]
1-609-217
S1 TIMER SELECT
60Hz
50Hz
[TS-24 BOARD]
CLOCK
TURN ON
TURN OFF
DAY
HOUR
10 MIN
MIN
S307 S305 S304 S306 S303 S302 S301
1-610-029
TIMER ON
TIMER REC
CASSETTE MARK
REC 12V
TO SS-13 BOARD CN402
2-2 4-3
BRN GRY YEL BLU WHT RED GRY
IC,Q
207
205,203,201
202
206 IC201
[TS-23 BOARD]
1-610-028
T2: DURING TIMER SET
IC201
FL201
DIGITAL VOLT METER
VOLTAGE MARKED ※ TO MEASURING POINT
FL 201 FLUORESCENT DISPLAY TUBE
AC 2.6V
4.9: LIT
0 : UNLIT
2ND DAY
3RD DAY
S2 TIMER REC S1
AM
PM
G (GRID)
4.9: DURING KEY PRESSED
5Vp-p
0 : 50Hz
4.8: 60Hz
L: REC TAPE END
4.3: DURING TIMER REC

PS-19 (LINE FILTER) **PS-20** (POWER SUPPLY) **PS-21** (50 Hz/60 Hz TIMER SELECT SWITCH) **TS-23** (TIMER, CHANNEL SWITCH) **TS-24** (TIMER SWITCH)

– Ref No. PS-19 BOARD: 7000 series, PS-20 BOARD: 7100 series, PS-21 B


(4)
(EI, PXI MODEL)
PS-19 (1/2) BOARD
(POWER SUPPLY (LINE FILTER))
AC 120V/220V 50/60Hz
F1 2A 125V
T1 LFT
C1 0.1 300V
R1 2.2M (1/2W)
CN1 (WHT)
AC
NC
AC
S901 VOLTAGE SELECTOR
T901 POWER TRANSFORMER
※: NOT REPLACEBLE: BUILT IN TRANSFORMER
(US, E2, PX2 MODEL)
PS-19 (1/2) BOARD
(POWER SUPPLY (LINE FILTER))
AC 120V 60Hz ---US MODEL
AC 120V 50/60Hz ---E2, PX2 MODEL
F1 2A 125V
C1 0.1 125V
R1 2.2M (1/2W)
C2 2200p 125V
C3 2200p 125V
CN1 (WHT)
AC 120V
NC
AC 120V
T901 POWER TRANSFORMER
※: NOT REPLACEBLE: BUILT IN TRANSFORMER
PS-21 BOARD
(POWER SUPPLY (SWITCH))
S1 TIMER SELECT
60Hz
50Hz
PS-19 (1/2) BOARD
(POWER SUPPLY) REGULATOR
CN2 (BLK)
VIO 18V AC
BRN 45V AC
GRY 2.4V AC
WHT GND
R3 10 (1/4W)
R2 10 (1/4W)
D1
D3 1SS119
D4, D5 1SS119 REF GEN
D9 RD5.1E-B2
C4 1 50V
R5 100k
C5 330 6.3V
C7 470 35V
C10 0.01
R10 2.2k
D1, D2, D6 10E1 RECT
D2
C6 33 100V
R4 1k
D6
C8 10 25V
D10 RD11E-B2 REGULATOR
D8 1SS119 REVERSE CURRENT STOPPER
CN6 (WHT)
FILAMENT AC 2.4V
AC REF FREQ
50/60Hz SW
TIMER B+
GND
TIMER IC GND
FL201 FLUORESCENT DISPLAY TUBE
D201
4.9: LIT
0: UNLIT
TO TA-12 or TA-20 BOARD CN1
4-1 3-2
CN4 (WHT)
UNSWITCHED 45V
UNSWITCHED -12V
SWITCHED 12V
GND
GND
LED 12V
TO SS-13 BOARD CN405
4-2 2-1
CN3 (WHT)
UNSWITCHED 16V
SWITCHED 12V
SWITCHED 12V
GND
GND
SWITCHED (SYS) 12V
SWITCHED (SYS) 12V
GND
GND
POWER ON SIG IN
TIMER STAND BY
C9 47/16V
R11 6.8k
0: POWER ON
3: POWER OFF
R7 10k
R6 10k
0.7: POWER ON
Q1 2SC2785 POWER ON/OFF CONTROL
D7 1SS119 REVERSE CURRENT STOPPER
0
11.4: TIMER STAND BY
PS-20 BOARD
(POWER SUPPLY (REGULATOR))
D101 – D108 S3V10F RECT
IC101 STK5324 REGULATOR/POWER ON, OFF CONTROL
IC101
REG 2
REG 1
MUTE
MUTE
GND 2
B+
FILTER
GND 1
0: POWER ON
3: POWER OFF
C104 100 25V
C103 47 16V
F101 3.15A 125V
C101 10000/25V (US MODEL) 4700/25V (E, PX MODEL)
F102 2A 125V
C102 6800 25V
CN101 (WHT)
RED SYS AC
RED SYS AC
BLU REG AC
BLU REG AC
AC 14.9
AC 14.6
AC 16.4
AC 42.6
AC 3.2
19.5
4.9
14.5
-16.9
-10.8
11.2
18.8
16.7
12
A B C D E F G H I J K L M N O O
1 2 3 4 5 6 7 8 9 10

S-20 BOARD: 7100 series, PS-21 BOARD: 7300 series, TS-23 BOARD: 8000 series, TS-24 BOARD: 8300 series –

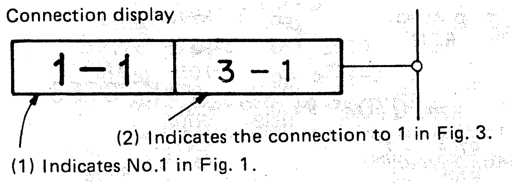

O
P
Q
R
S
T
U
V
W
X
Y
Z
A1
TS-23 (1/2) BOARD
(TIMER CONTROL, CHANNEL SWITCH)
TS-24 (1/2) BOARD
(TIMER SWITCH)
AC 2.6V
FL201 FLUORESCENT DISPLAY TUBE
S2 TIMER REC
S3 2nd Day
S4 3rd Day
AM
PM
GRID
MIN
10 MIN
HOUR
TURN OFF
CLOCK
DAY
TURN ON
S301 S302 S303 S306 S304 S305 S307
D201 RD7.5EB1
Q206 2SA1048 CASSETTE MARK DRIVER
Q205 2SA1048 TIMER REC DRIVER
Q207 2SC2785 TIMER REC DRIVER
Q201 2SA1048 BUFFER
Q202 2SC2785 TIMER ON/OFF SW
Q203 2SC2785 TIMER OFF SW
4.8: CASSETTE IS NOT INSERTED
0 : CASSETTE IS INSERTED
0: DURING TIMER SET
4.2: DURING TIMER SET
0.7: DURING TIMER SET
4.3: DURING TIMER REC
3.7: DURING TIMER REC
0: DURING TIMER REC
0.6: DURING TIMER REC
REC, TAPE END
4.9: LIT
0 : UNLIT
IC201 LR3466 CLOCK/TIMER CONTROL
SEGMENT DRIVE
TIMER OUT
TIMER IC GND
TIMER ON/OFF
MIN
10MIN
HOUR
TURN OFF SET
TURN ON SET
CLOCK
50/60Hz SW
DAY SET
Vpp REFERENCE FREQUENCY IN
5Vp-p
4.9: DURING KEY PRESSED
0 :50Hz
4.8:60Hz
DIGITAL VOLT METER
VOLTAGE MARKED ※ TO MEASORING POINT
TO SS-13 BOARD CN402
2-2
4-3
REC 12V
TIMER REC
CASSETTE MARK
TIMER ON
12: DURING TIMER SET
6.3: DURING TIMER REC

NO MARK : E-E MODE

▭ : UNSWITCHED VOLTAGE

NOTES:

- Connection display



(2) Indicates the connection to 1 in Fig. 3.

(1) Indicates No.1 in Fig. 1.

Fig. 1 ...... Video block
Fig. 2 ...... Servo/system control block
Fig. 3 ...... Tuner/audio block
Fig. 4 ...... Power/timer block

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- ━━ : B + bus.
- ━ ━ : B − bus.
- (▭ : Unswitched)
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.
  ✱ : Reference value between timer IC and grounding

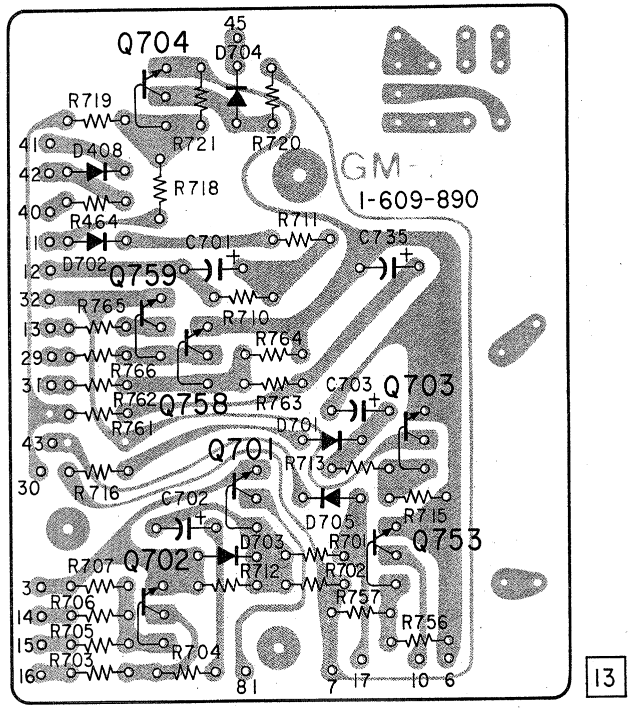
The voltage value is measured using a digital tester (10MΩ/V).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

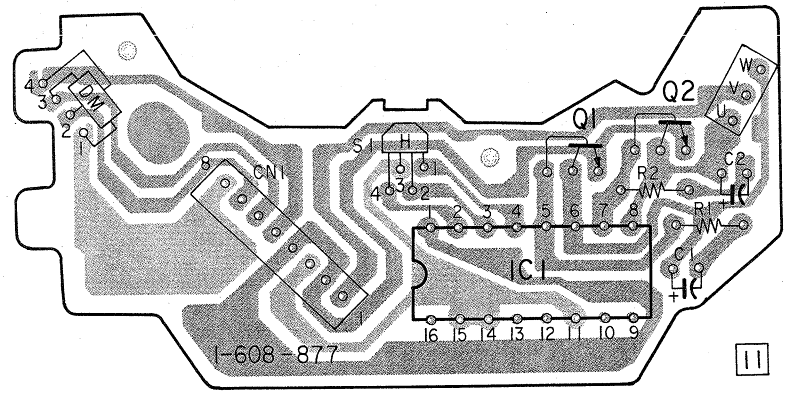
When indicating parts by reference number, please include the board name.

The printed diagram on component side is shown in servo and system control blocks (on pages 92 to 96).

[GM-2 BOARD] - CONDUCTOR SIDE -

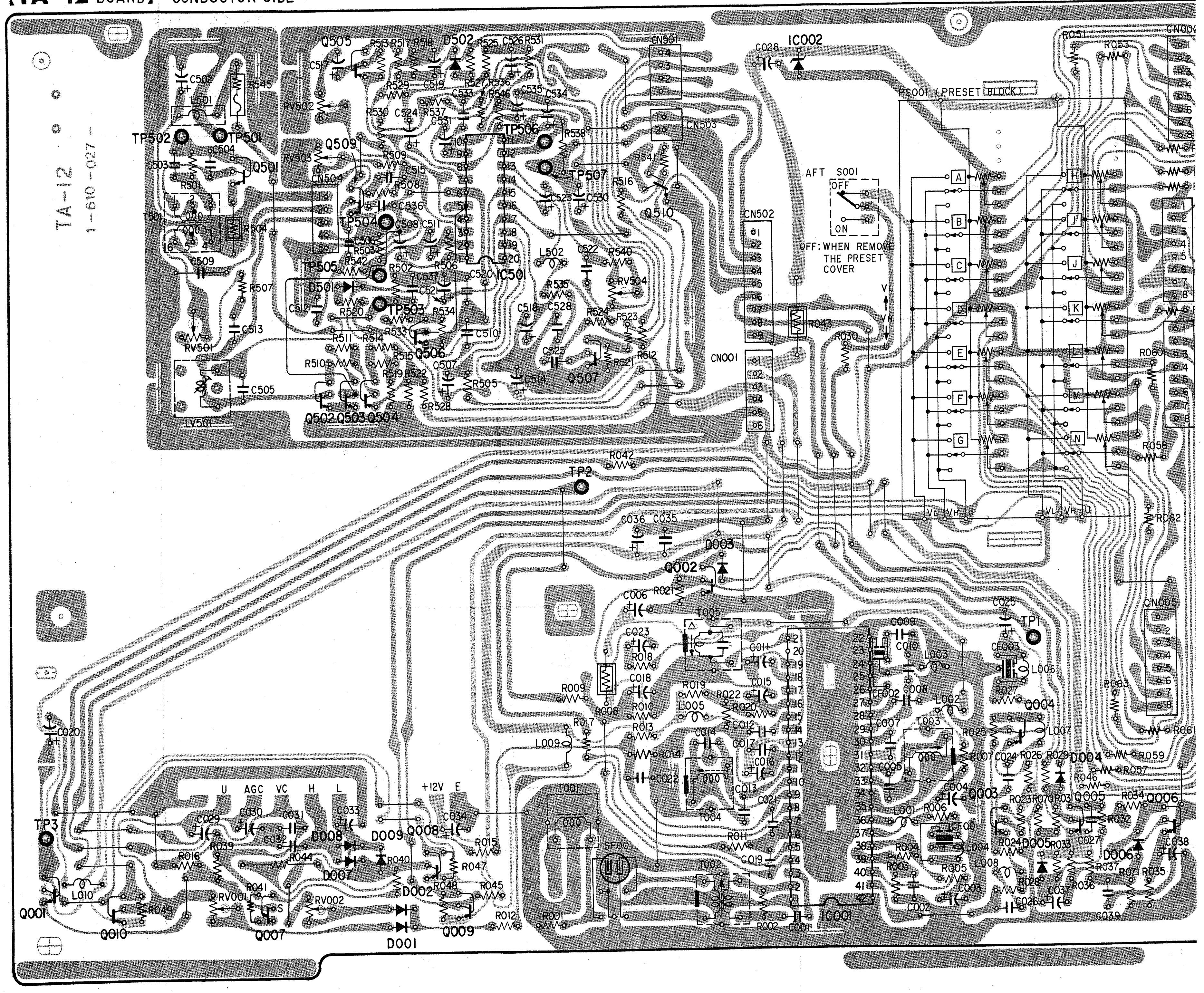

Q704
D704
45
R719
R721
R720
D408
R718
R464
R711
C701
C735
D702
Q759
R765
R710
R764
R766
R762
Q758
R763
C703
Q703
R761
D701
Q701
R713
R716
C702
D705
R715
R707
Q702
D703
R701
Q753
R712
R702
R757
R706
R705
R703
R704
R756
GM-2
1-609-890
13

[CAPSTAN MOTOR BOARD] - CONDUCTOR SIDE -


DM
CN1
H
S1
Q1
Q2
W
U
V
R2
R1
C2
C1
IC1
1-608-877
11

The printed diagram on component side is shown in tuner and audio blocks (on pages 112 to 116).

[TA-12 BOARD] - CONDUCTOR SIDE -

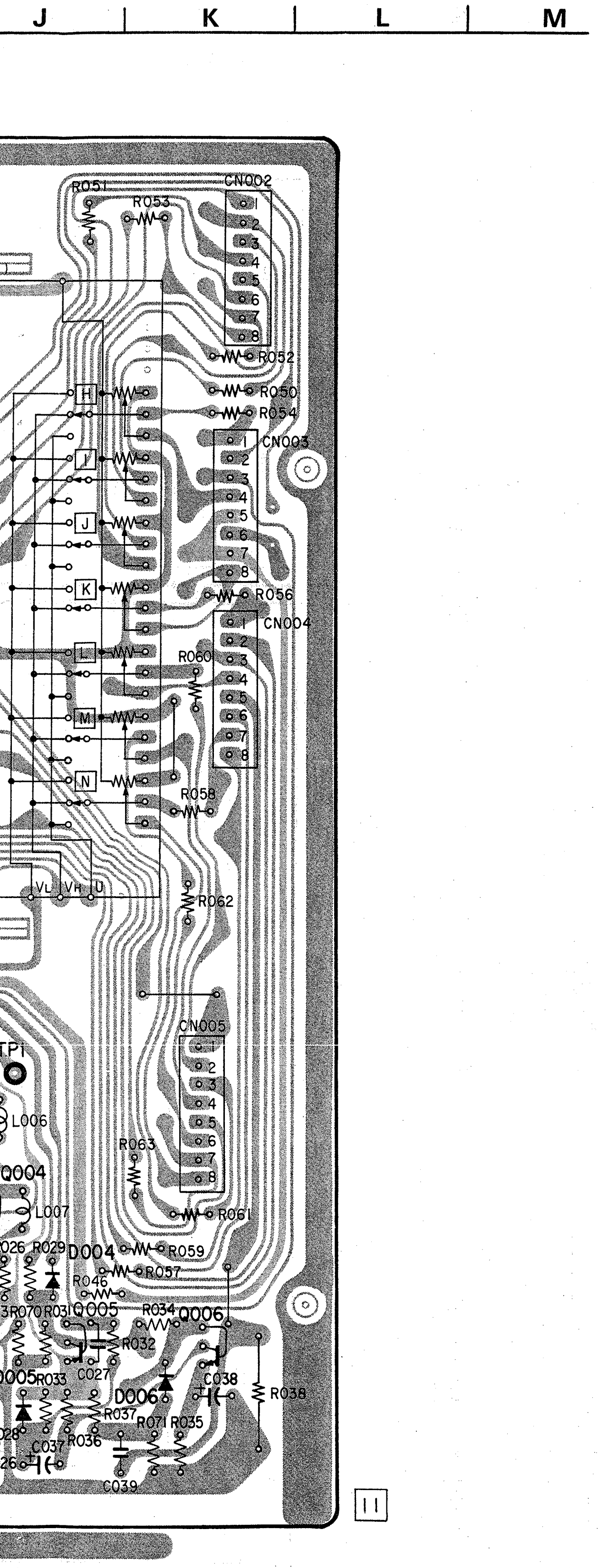

TA-12
1-610-027-
Q505
D502
CN501
C028
IC002
R051
R053
CN002
PS001 (PRESET BLOCK)
L501
R545
RV502
TP502
TP501
Q509
RV503
Q501
CN504
TP506
TP507
CN503
AFT S001
OFF
ON
OFF: WHEN REMOVE THE PRESET COVER
Q510
T501
R501
TP504
CN502
TP505
D501
IC501
TP503
L502
RV504
VL
VH
CN001
R043
R030
RV501
Q506
Q507
Q502 Q503 Q504
LV501
A
B
C
D
E
F
G
H
I
J
K
L
M
N
R060
R058
R042
TP2
R062
C036 C035
D003
Q002
R021
C006
T005
C009
C025
TP1
C023
R018
C011
C010
L003
CF003
L006
C018
R009
R008
R019
R022
C015
CF002
C008
L002
R027
Q004
R010
L005
R020
R063
R017
R013
L009
C014
C007
T003
R025
L007
R014
C012
C017
C016
R007
C024
R026
R029
D004
R059
C022
C005
R046
R057
C013
C004
Q003
R023
R070
R031
Q005
R034
Q006
C020
U AGC VC H L
+12V E
T001
T004
L001
R006
R032
TP3
C029
C030
C031
C033
C034
R015
CF001
L004
R024
D005
R033
C027
D006
C038
R016
R039
C032
D008
D009
Q008
R040
R047
R011
SF001
C019
R004
L008
R005
R037
R071
R035
R044
D007
R041
D002
R045
T002
R003
R028
C037
R036
Q001
L010
R049
RV001
RV002
R048
R012
R001
R002
C001
IC001
C003
C002
C026
C039
Q010
Q007
Q009
D001
CN005

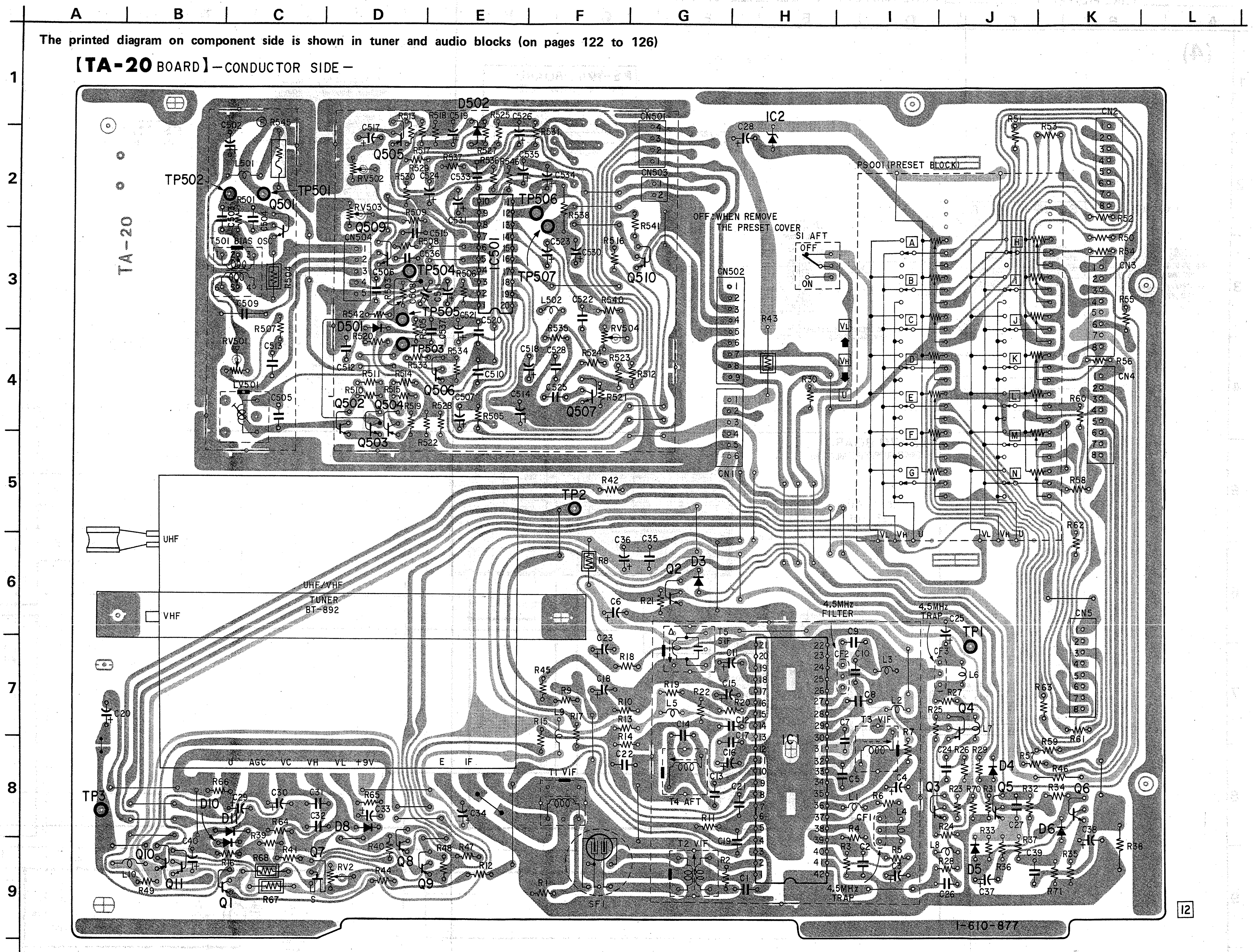
- [ ] indicates side identified with part number.
- ▨ Soldering side

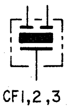
TA-20 (VIF, SIF, AFT, AGC) — Ref. No. TA-20 BOARD: 6000 series —

The printed diagram on component side is shown in tuner and audio blocks (on pages 122 to 126)

[TA-20 BOARD] — CONDUCTOR SIDE —


J
K
L
M
R051
R053
CN002
R052
R050
R054
CN003
R056
CN004
R060
R058
R062
CN005
R063
R061
R059
R057
TP1
L006
Q004
L007
D004
R046
Q005
Q006
R034
R032
C027
D006
C038
R038
R037
R071
R035
R036
C037
C039
11


A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
TA-20
TP502
TP501
Q501
R501
L501
R545
T501 BIAS OSC
RV501
LV501
C505
C509
Q505
Q509
RV502
RV503
CN504
D502
D501
TP504
TP505
TP503
Q502
Q503
Q504
Q506
IC501
TP506
TP507
Q507
Q510
CN501
CN503
CN502
CN1
IC2
OFF: WHEN REMOVE THE PRESET COVER
S1 AFT
OFF
ON
R43
VL
VH
U
PS001 (PRESET BLOCK)
CN2
CN3
CN4
CN5
R42
TP2
UHF
VHF
UHF/VHF TUNER BT-892
U AGC VC VH VL +9V
E IF
C36
C35
R8
Q2
D3
C6
R21
4.5MHz FILTER
4.5MHz TRAP
T5 SIF
T3 VIF
T4 AFT
T1 VIF
T2 VIF
IC1
SF1
CF1
TP1
TP3
C20
Q1
Q7
Q8
Q9
Q10
Q11
D8
D10
D11
RV2
Q3
Q4
Q5
Q6
D4
D5
D6
L6
L7
L8
1-610-877
12



▭ indicates side identified with part number.

▨ Soldering side

▨ B + pattern

▨ B – pattern

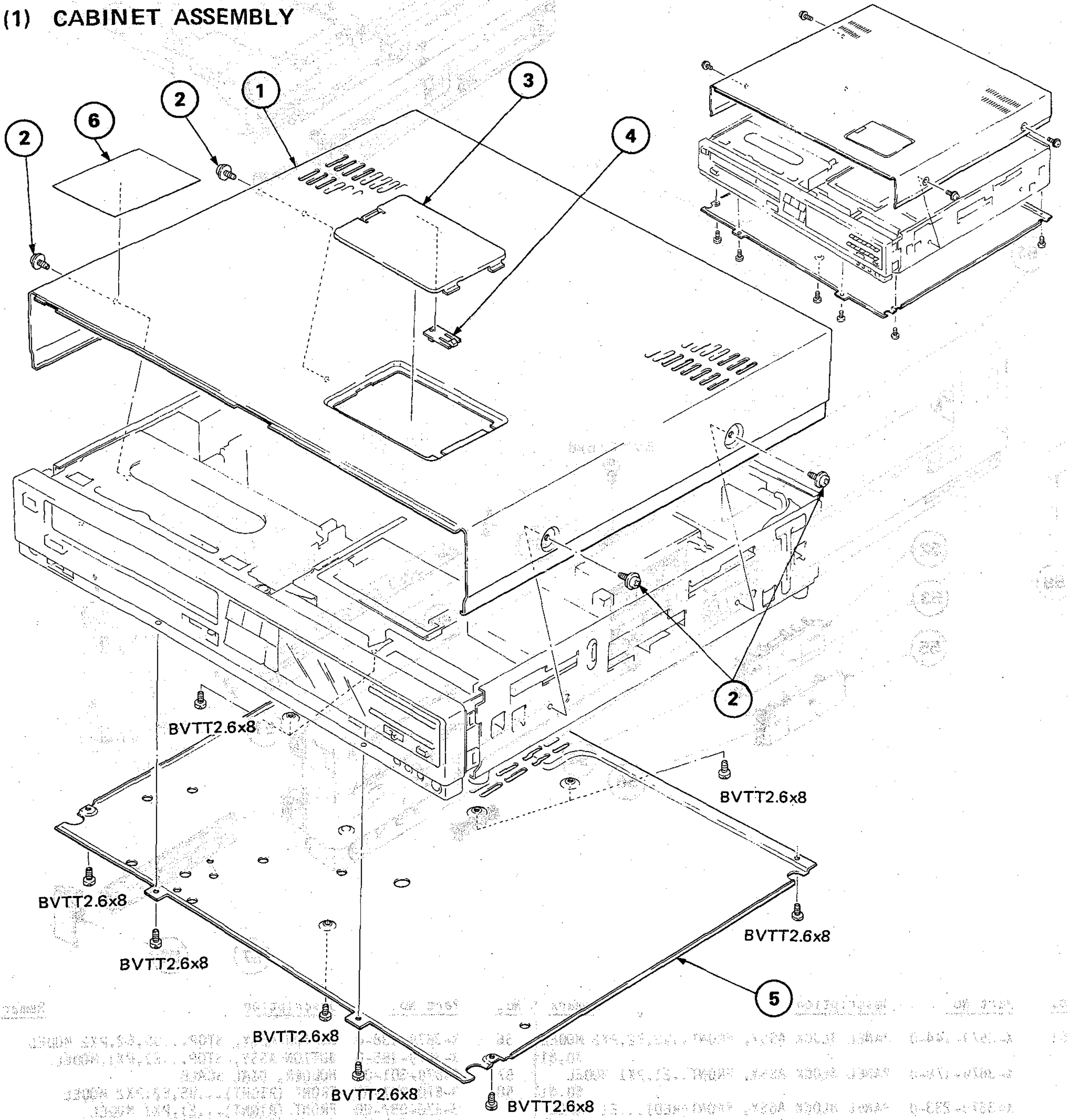
SECTION 4
EXPLODED VIEW

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

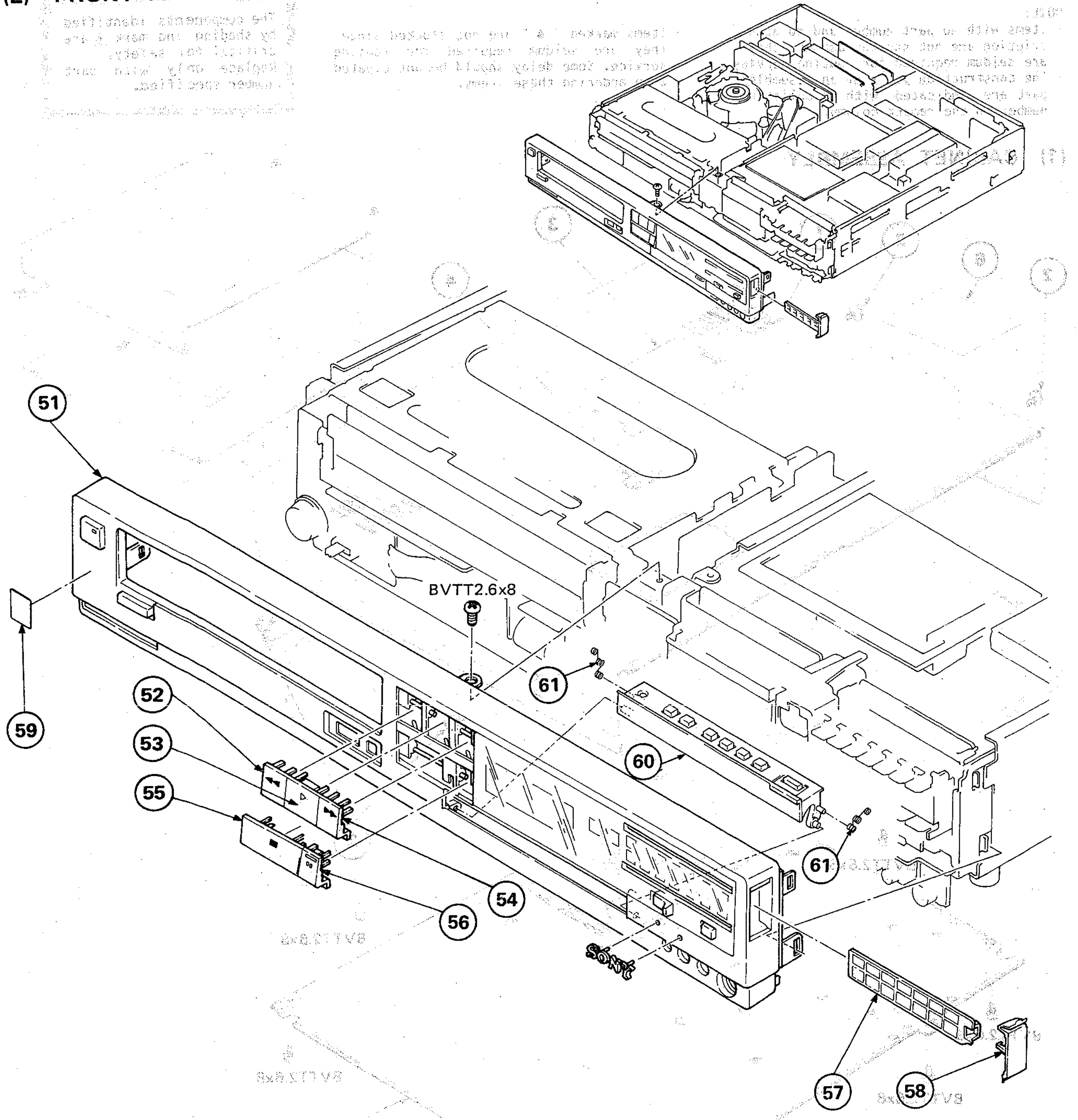
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(1) CABINET ASSEMBLY



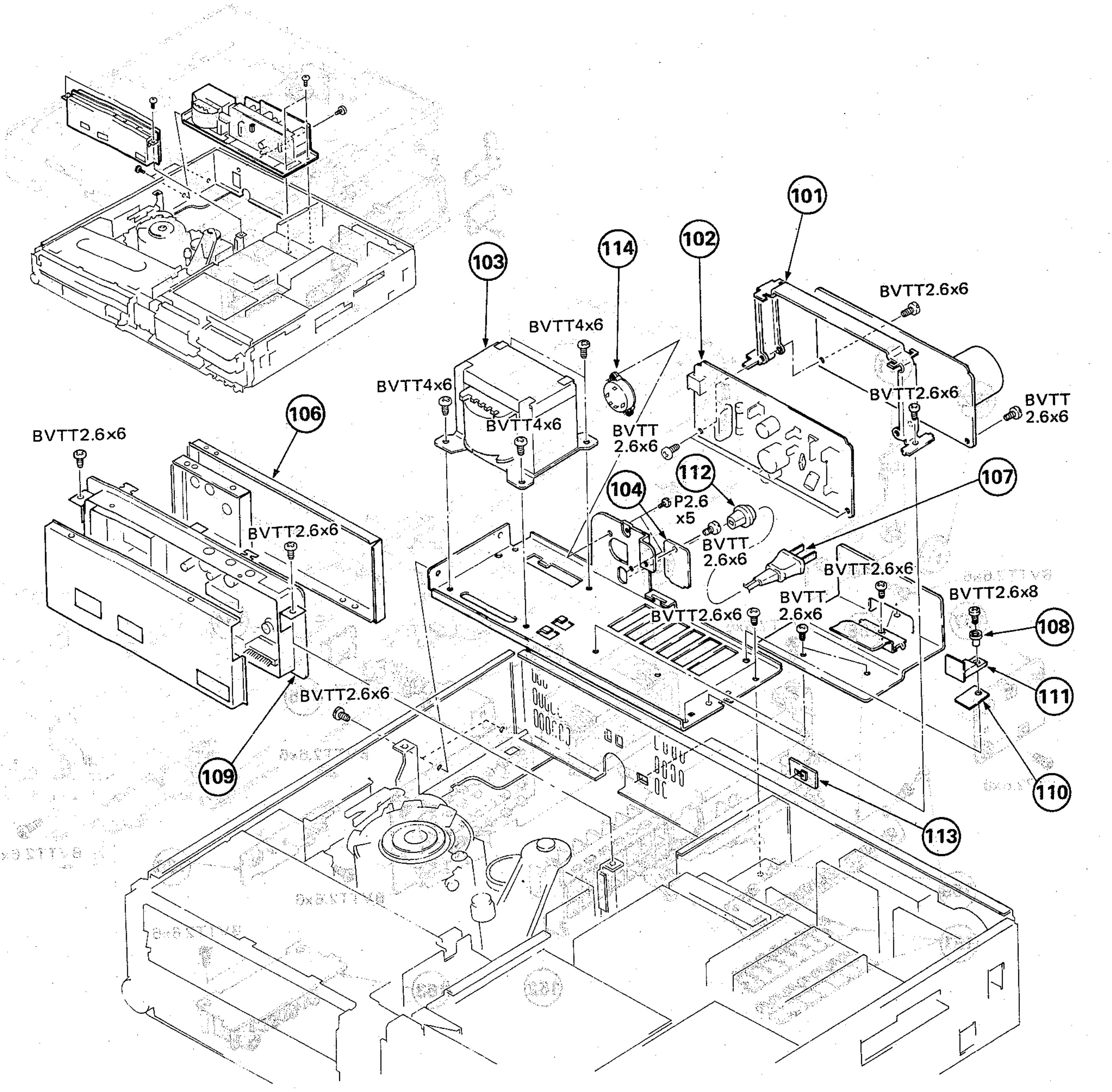
No.	Part No.	Description	Remark
1	3-679-273-41	CASE...US,E2,PX2 MODEL	
	3-679-273-00	CASE...E1,PX1 MODEL	
	3-679-273-31	CASE (RED)...E1 MODEL	
2	4-847-802-11	SCREW, CASE STOPPER	
3	X-3679-140-0	LID ASSY, PRESET...US,E2,PX2 MODEL	
	X-3679-171-0	LID ASSY, PRESET...E1,PX1 MODEL	
	X-3679-232-0	LID ASSY, PRESET(RED)...E1 MODEL	
4	3-679-148-31	BUTTON, SELECTION, AFT	
5	X-3679-131-0	PLATE ASSY, BOTTOM	
6	3-703-703-00	STICKER, SONY SYMBOL (50)	

(2) FRONT PANEL ASSEMBLY



No.	Part No.	Description	Remark
51	X-3679-144-0	PANEL BLOCK ASSY, FRONT..US,E2,PX2 MODEL	60,61
	X-3679-178-0	PANEL BLOCK ASSY, FRONT..E1,PX1 MODEL	60,61
	X-3679-233-0	PANEL BLOCK ASSY, FRONT(RED)...E1 MODEL	60,61
52	3-679-296-00	BUTTON, REWIND...US,E2,PX2 MODEL	
	3-679-296-21	BUTTON, REWIND...E1,PX1 MODEL	
53	X-3679-139-0	BUTTON ASSY, PLAYBACK...US,E2,PX2 MODEL	
	X-3679-156-0	BUTTON ASSY, PLAYBACK...E1,PX1 MODEL	
54	3-679-298-00	BUTTON, FAST FORWARD...US,E2,PX2 MODEL	
	3-679-298-21	BUTTON, FAST FORWARD...E1,PX1 MODEL	
55	3-679-299-00	BUTTON, STOP...US,E2,PX2 MODEL	
	3-679-299-21	BUTTON, STOP...E1,PX1 MODEL	
56	X-3679-138-0	BUTTON ASSY, STOP...US,E2,PX2 MODEL	
	X-3679-155-0	BUTTON ASSY, STOP...E1,PX1 MODEL	
57	3-679-301-00	HOLDER, DIAL SCALE	
58	3-670-087-61	FRONT (RIGHT)...US,E2,PX2 MODEL	
	3-670-087-00	FRONT (RIGHT)...E1,PX1 MODEL	
	3-670-087-51	FRONT (RIGHT)(RED)...E1 MODEL	
59	3-703-709-00	STICKER, SONY SYMBOL (15)	
60	X-3679-154-0	DOOR ASSY, TIMER...US,E2,PX2 MODEL	
	X-3679-159-0	DOOR ASSY, TIMER...E1,PX1 MODEL	
	X-3679-234-0	DOOR ASSY, TIMER(RED)...E1 MODEL	
61	3-679-306-00	SPRING	

(3) POWER BLOCK ASSEMBLY

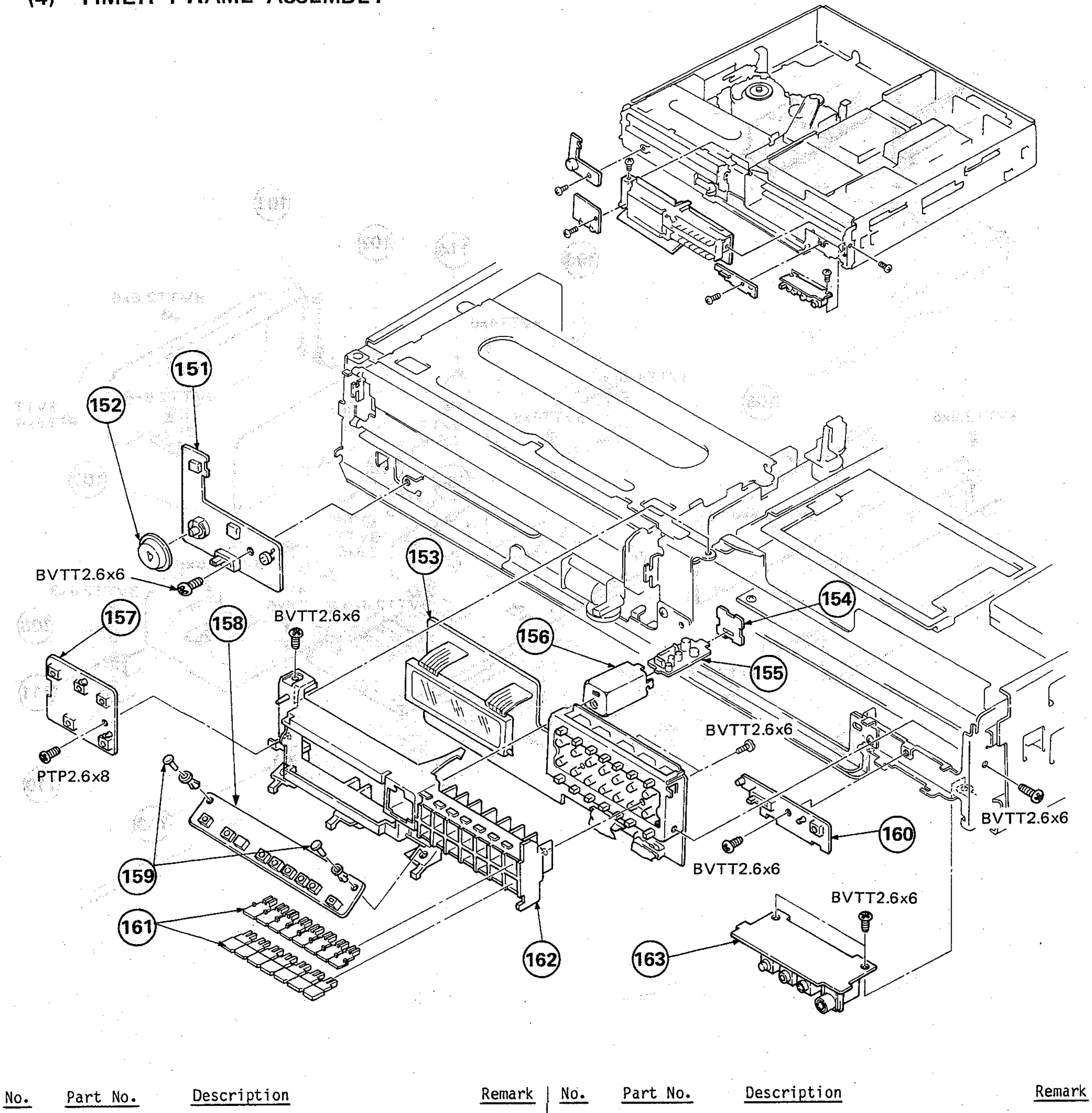

101
114
102
103
BVTT2.6x6
BVTT4x6
BVTT4x6
BVTT4x6
BVTT 2.6x6
BVTT2.6x6
BVTT 2.6x6
106
BVTT2.6x6
112
104
P2.6 x5
107
BVTT2.6x6
BVTT 2.6x6
BVTT2.6x6
BVTT2.6x8
BVTT 2.6x6
BVTT2.6x6
108
111
BVTT2.6x6
109
110
113

No.	Part No.	Description	Remark
101	♠:1-609-216-00	PS-20 BOARD	
102	♠:A-6728-711-A	PS-19 BOARD, COMPLETE	
103	⚠.1-447-577-00	TRANSFORMER, POWER;T901..US,E2,PX2 MODEL	
	⚠.1-447-693-00	TRANSFORMER, POWER...E1,PX1 MODEL	
104	♠:1-609-217-21	PS-21 BOARD	
106	♠:3-679-241-00	CASE (LOWER), SHIELD, RP-55	
107	⚠.1-551-964-00	CORD, POWER...US,E2,PX2 MODEL	
	⚠.1-551-331-21	CORD, POWER...E1,PX1 MODEL	

No.	Part No.	Description	Remark
108	2-832-007-00	BUSHING (K), INSULATING	
109	♠:A-6730-613-A	RP-8 BOARD, COMPLETE (PB BLOCK ASSY)	
110	3-701-754-00	PLATE, INSULATING	
111	♠:1-609-445-21	PS-25 BOARD	
112	2-231-019-00	CLAMPER, CORD	
113	3-679-292-00	COVER, SELECTION, FREQUENCY...US MODEL	
114	⚠.1-552-304-00	SWITCH, POWER VOLTAGE CHANGE: S901 ...E1,PX1 MODEL	

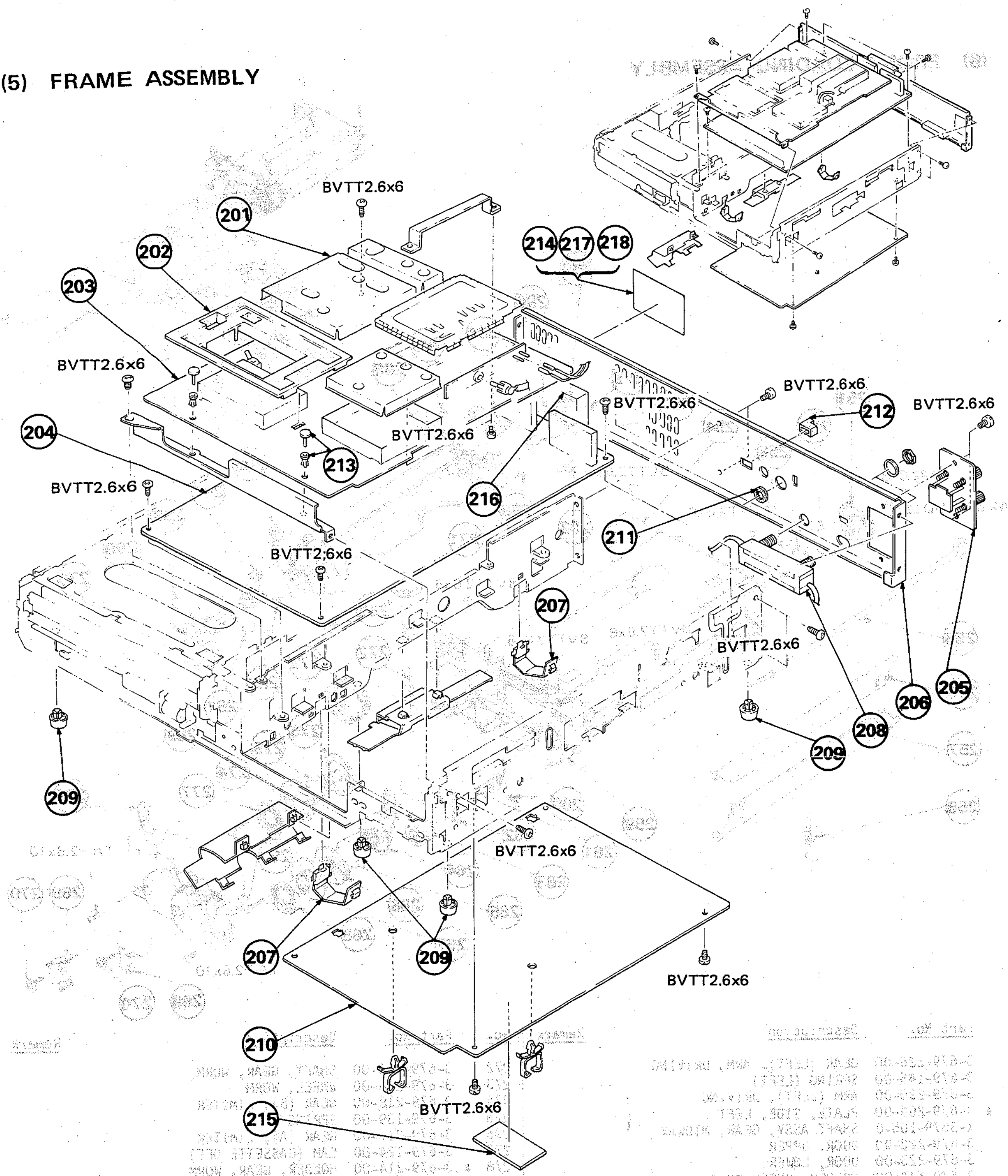
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(4) TIMER FRAME ASSEMBLY


151
152
BVTT2.6x6
157
158
BVTT2.6x6
153
156
154
155
BVTT2.6x6
PTP2.6x8
159
161
162
163
BVTT2.6x6
160
BVTT2.6x6
BVTT2.6x6

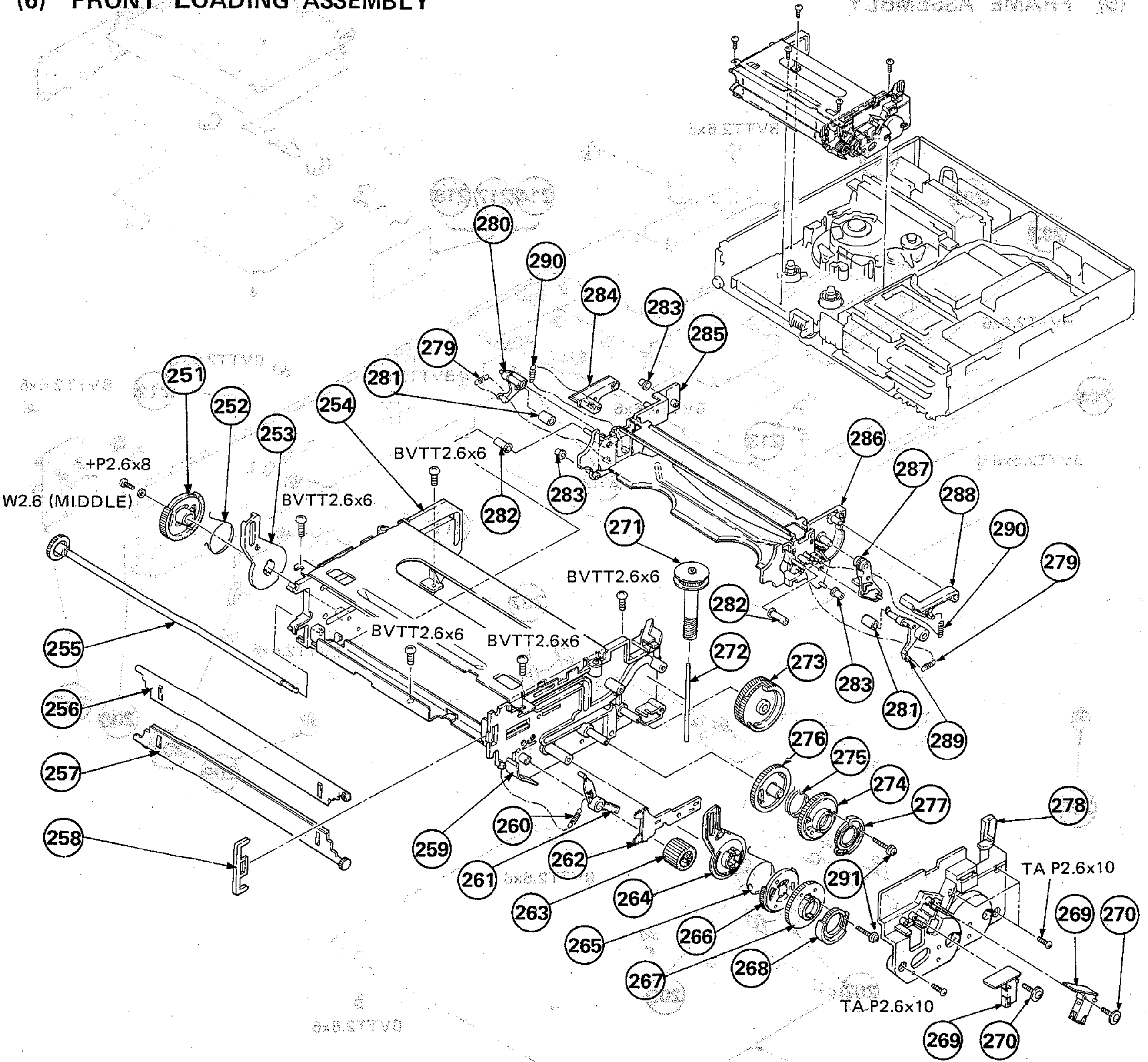
No.	Part No.	Description	Remark
151	♠:1-609-221-00	FS-21 BOARD	
152	3-679-207-00	KNOB, TRACK CONTROL	
153	♠:1-610-028-00	TS-23 BOARD	
154	♠:4-342-118-00	LID SHIELD CASE R	
155	♠:1-606-794-00	N BOARD	
156	♠:4-342-117-00	CASE SHIELD (MAIN) R	
157	♠:1-609-219-00	FS-19 BOARD	
158	♠:1-610-029-00	TS-24 BOARD	
159	4-812-134-11	RIVET NYLON, 3.5	
160	♠:1-609-220-00	FS-20 BOARD	
161	3-679-167-00	KNOB, TUNING	
162	♠:3-679-303-00	FRAME, T.T	
163	♠:1-609-222-00	JK-1 BOARD	

(5) FRAME ASSEMBLY


BVTT2.6x6
201
202
203
214 217 218
BVTT2.6x6
BVTT2.6x6
212
BVTT2.6x6
204
BVTT2.6x6
213
BVTT2.6x6
216
BVTT2.6x6
211
BVTT2.6x6
207
BVTT2.6x6
205
206
208
209
209
BVTT2.6x6
207
209
BVTT2.6x6
210
BVTT2.6x6
215

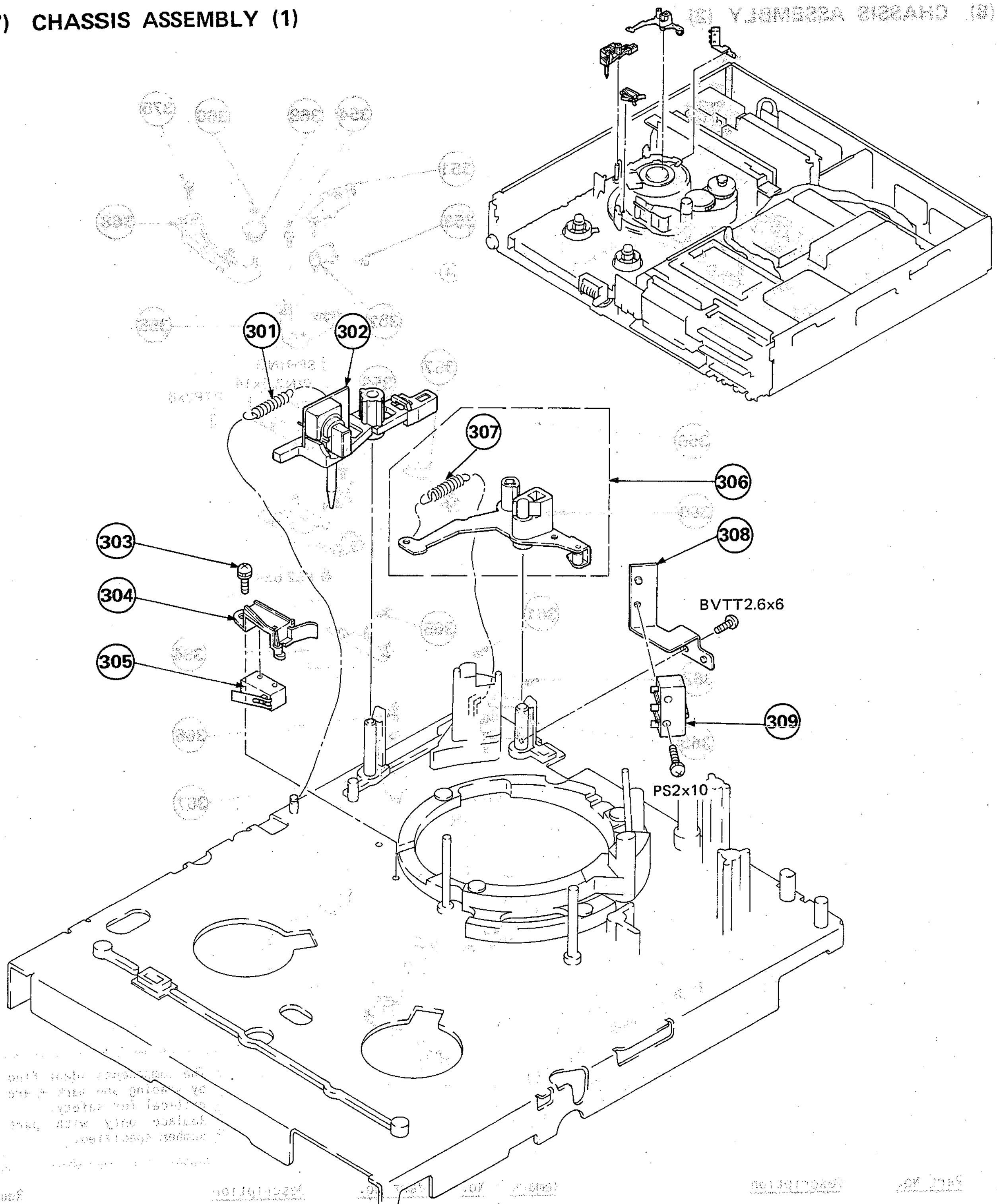
No.	Part No.	Description	Remark
201	♠:3-679-238-00	CASE (UPPER), SHIELD, AU-44	
202	3-679-302-00	COVER, PRESET	
203	♠:A-6721-166-A	TA-12 BOARD, COMPLETE...FORMER	
	♠:A-6721-186-A	TA-20 BOARD, COMPLETE...NEW	
204	♠:A-6711-433-A	YC-22 BOARD, COMPLETE	
205	1-417-092-00	DISTRIBUTOR, ANTENNA (UHF); TB991	
206	3-679-267-11	PLATE, JACK...US,E2,PX2 MODEL	
	3-679-267-31	PLATE, JACK...E1,PX1 MODEL	
207	♠:3-679-229-00	HINGE, SS	
208	1-554-372-00	SWITCH, ANTENNA CHANGE; S996	
209	3-670-155-00	LEG	
210	♠:A-6717-320-A	SS-13 (B-299) BOARD, COMPLETE	
211	♠:3-679-180-00	PLATE (R), ORNAMENTAL, JACK	
212	3-679-289-00	COVER, PCM	
213	4-812-134-11	RIVET NYLON, 3.5	
214	♠:3-679-295-00	LABEL, MODEL NUMBER...US MODEL	
215	♠:1-609-890-13	GM-2 BOARD...FORMER	
216	1-464-266-00	RF UNIT, COLOR (RFU-702); MD001	
217	♠:3-679-337-00	LABEL, MODEL NUMBER...E2,PX2 MODEL	
218	♠:3-679-374-00	LABEL, MODEL NUMBER...E1,PX1 MODEL	

(6) FRONT LOADING ASSEMBLY


251
252
253
254
+P2.6x8
W2.6 (MIDDLE)
BVTT2.6x6
BVTT2.6x6
255
256
257
258
BVTT2.6x6
BVTT2.6x6
259
260
261
262
263
264
265
266
267
268
280
290
284
283
285
279
281
282
283
BVTT2.6x6
BVTT2.6x6
271
282
272
273
276
275
274
277
291
286
287
288
290
279
283
281
289
278
TA P2.6x10
269
270
TA P2.6x10
269
270

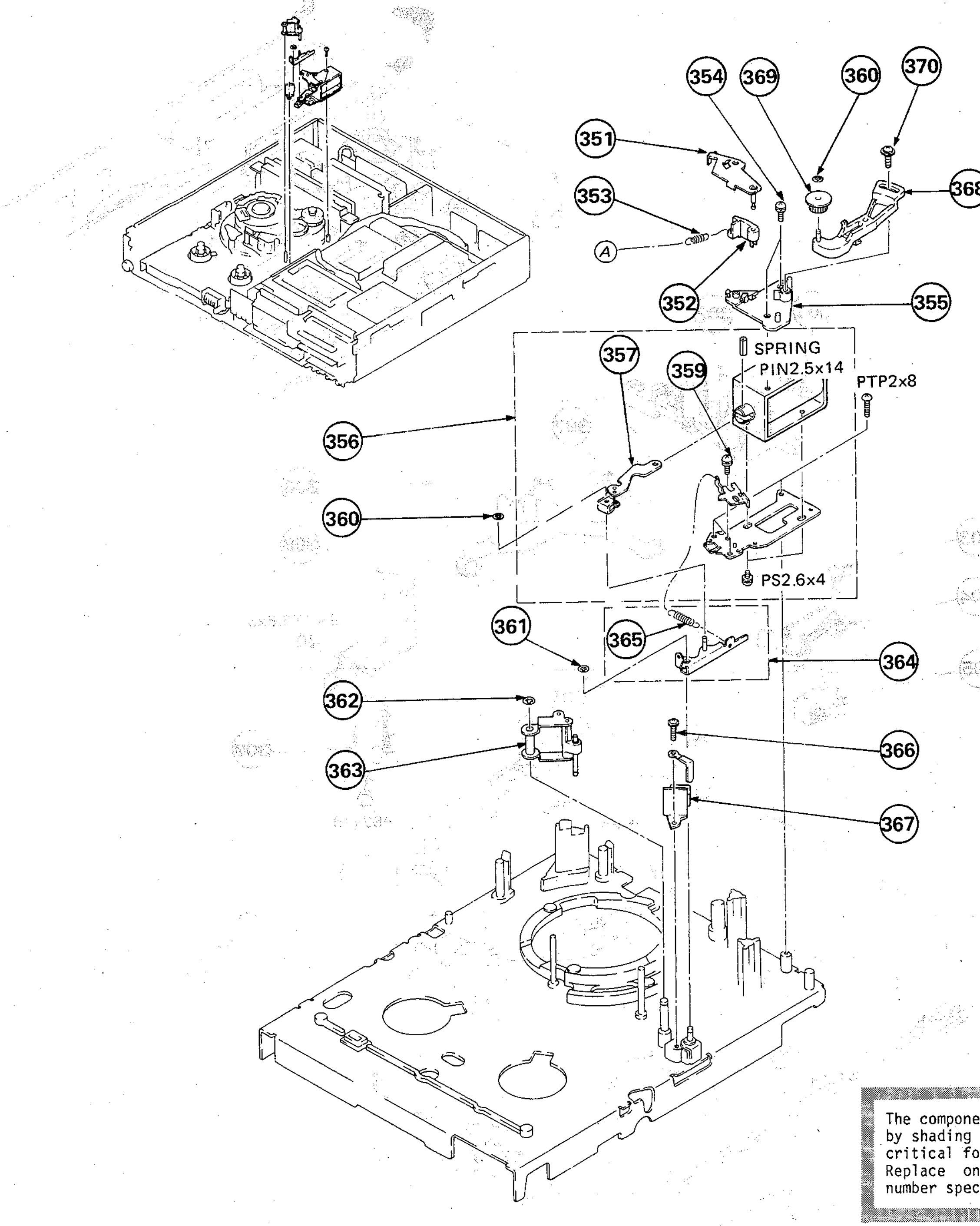
No.	Part No.	Description	Remark
251	3-679-226-00	GEAR (LEFT), ARM, DRIVING	
252	3-679-145-00	SPRING (LEFT)	
253	3-679-220-00	ARM (LEFT), DRIVING	
254	●:3-679-266-00	PLATE, SIDE, LEFT	
255	X-3679-105-0	SHAFT ASSY, GEAR, MIDWAY	
256	3-679-222-00	DOOR, UPPER	
257	3-679-223-00	DOOR, LOWER	
258	3-679-137-00	HOLDER, OUTER DOOR	
259	●:3-679-265-00	PLATE, SIDE, RIGHT	
260	3-679-189-00	SPRING, TENSION	
261	3-679-134-00	ARM, SWITCHING, DOOR	
262	3-679-221-00	PLATE, RACK, SWITCHING, DOOR	
263	3-679-126-00	GEAR (RIGHT), MIDWAY	
264	3-679-219-00	ARM (RIGHT), DRIVING	
265	3-679-144-00	SPRING (RIGHT)	
266	3-679-225-00	GEAR (RIGHT), ARM, DRIVING	
267	3-679-125-00	GEAR, DRIVING	
268	3-679-138-00	CAM (CASSETTE ON)	
269	1-554-241-00	SWITCH, LEVER; S301, S302	
270	3-669-480-11	+ PTPWH 2	
271	3-679-215-00	GEAR, WORM	
272	3-679-123-00	SHAFT, GEAR, WORM	
273	3-679-216-00	WHEEL, WORM	
274	3-679-218-00	GEAR (B), LIMITER	
275	3-679-139-00	SPRING	
276	3-679-217-00	GEAR (A), LIMITER	
277	3-679-124-00	CAM (CASSETTE OFF)	
278	●:3-679-214-00	HOLDER, GEAR, WORM	
279	3-679-288-00	SPRING, TENSION	
280	3-679-130-00	LEVER (LEFT), RETAINER, CASSETTE	
281	3-679-135-00	RUBBER, RETAINER, CASSETTE	
282	3-679-128-00	ROLLER (RIGHT), DRIVING	
283	3-679-143-00	ROLLER	
284	3-679-132-00	LEVER (LEFT), PREVENTION	
285	●:X-3679-107-0	PLATE ASSY, SIDE, BASE LEFT	
286	●:X-3679-106-0	PLATE ASSY, SIDE, BASE RIGHT	
287	3-679-133-00	ARM, LID OPEN	
288	3-679-131-00	LEVER (RIGHT), PREVENTION	
289	3-679-129-00	LEVER(RIGHT), RETAINER, CASSETTE	
290	3-679-188-00	SPRING, TENSION	
291	3-669-480-21	+ PTPWH 2	

(7) CHASSIS ASSEMBLY (1)


301
302
307
306
303
308
304
BVTT2.6x6
305
309
PS2x10

No.	Part No.	Description	Remark
301	3-679-164-00	SPRING, TENSION	
302	1-464-249-00	SENSOR, S COIL; L991	
303	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
304	♠:3-669-355-00	HOLDER, SWITCH, ULE	
305	1-553-718-00	SWITCH, MICRO; S994	
306	X-3679-149-0	ARM (B) ASSY, LOCK	307
307	3-679-323-00	SPRING, TENSION	
308	♠:3-672-542-00	BRACKET, SWITCH, LE	
309	1-553-539-00	SWITCH, MICRO; S993	

(8) CHASSIS ASSEMBLY (2)

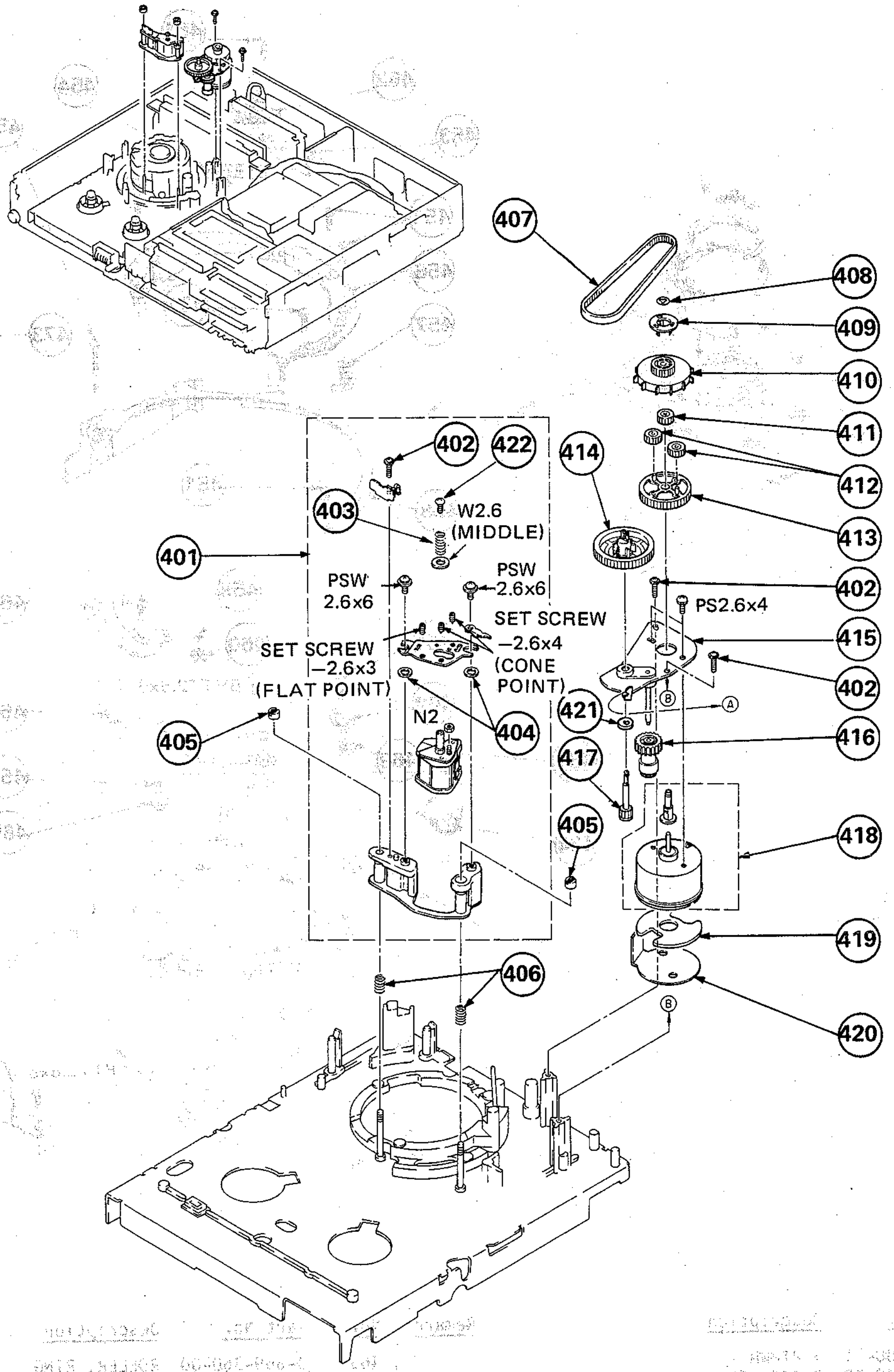

354
369
360
370
351
353
368
A
352
355
SPRING PIN2.5x14
357
359
PTP2x8
356
360
PS2.6x4
361
365
364
362
366
363
367

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
351	♦:X-3679-123-0	ARM ASSY, STOPPER	
352	♦:3-679-251-00	LIMITER, STOPPER	
353	3-661-382-00	SPRING, TENSION	
355	♦:3-679-117-00	CHASSIS, ARM, STOPPER	
356	⚠ A-6749-080-B	SOLENOID BLOCK ASSY, PINCH	357,359
357	X-3679-152-0	ARM (B) ASSY, PINCH SOLENOID	
359	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
360	3-669-465-00	WASHER (1.5), STOPPER	

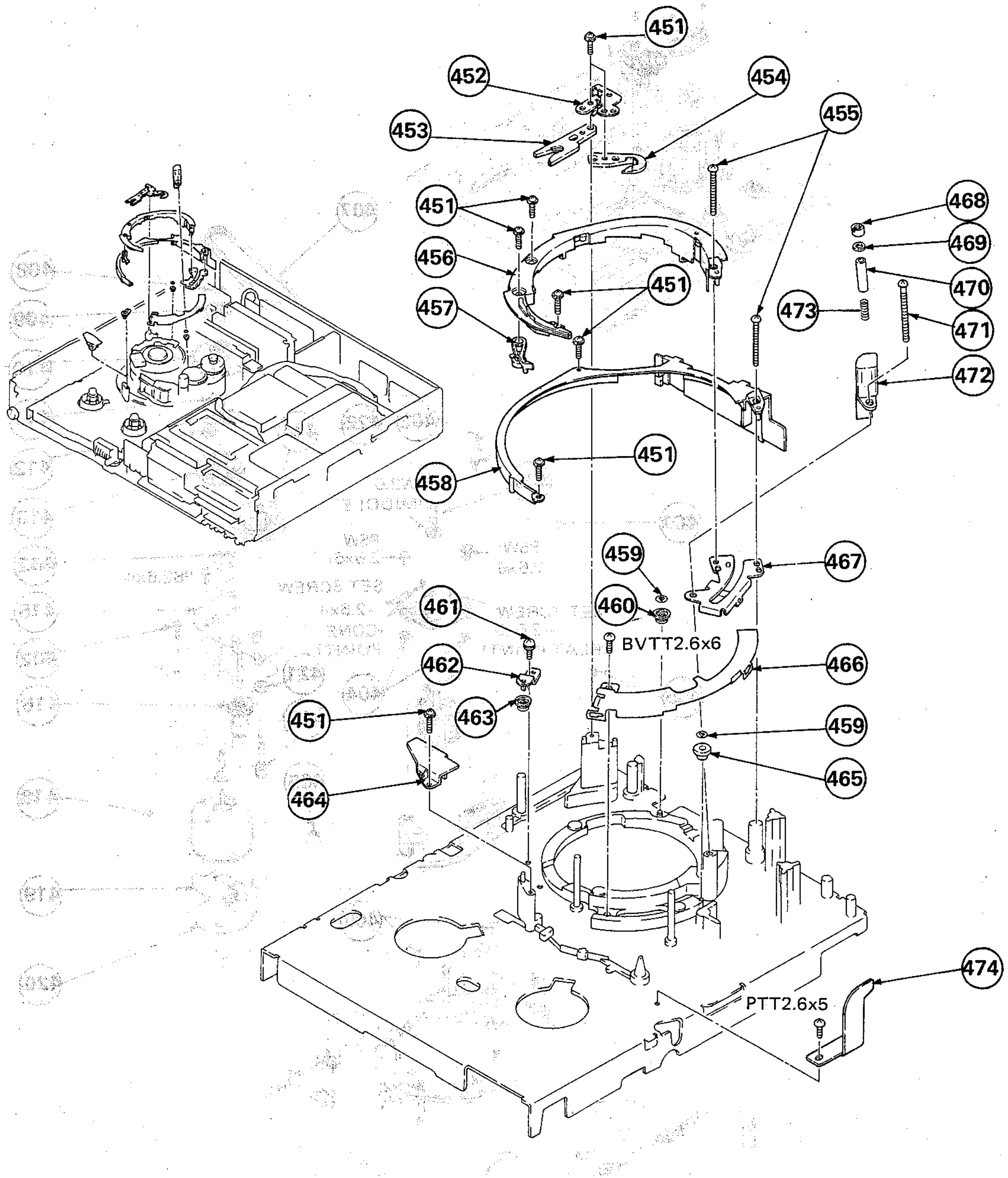
No.	Part No.	Description	Remark
361	3-669-595-00	WASHER (2), STOPPER	
362	3-669-596-00	WASHER (2.3), STOPPER	
363	♦:X-3679-108-0	ARM ASSY, PRESS, PINCH	
364	♦:X-3669-379-0	ARM (P) ASSY, PINCH LIMITER	365
365	3-465-159-XX	SPRING, TENSION	
366	3-669-480-11	+ PTPWH 2	
367	1-464-250-00	SENSOR, T COIL, L992	
368	♦:X-3679-145-0	ARM ASSY, CAR, TENSION	
369	3-679-307-00	GEAR, TENSION	
370	3-681-231-00	PW 2.6X8	

(9) CHASSIS ASSEMBLY (3)


407
408
409
410
411
412
413
402
422
414
403
W2.6
(MIDDLE)
401
PSW
2.6x6
PSW
-2.6x6
SET SCREW
-2.6x4
(CONE
POINT)
SET SCREW
-2.6x3
(FLAT POINT)
PS2.6x4
402
415
402
421
A
B
N2
404
405
416
417
405
418
419
406
B
420

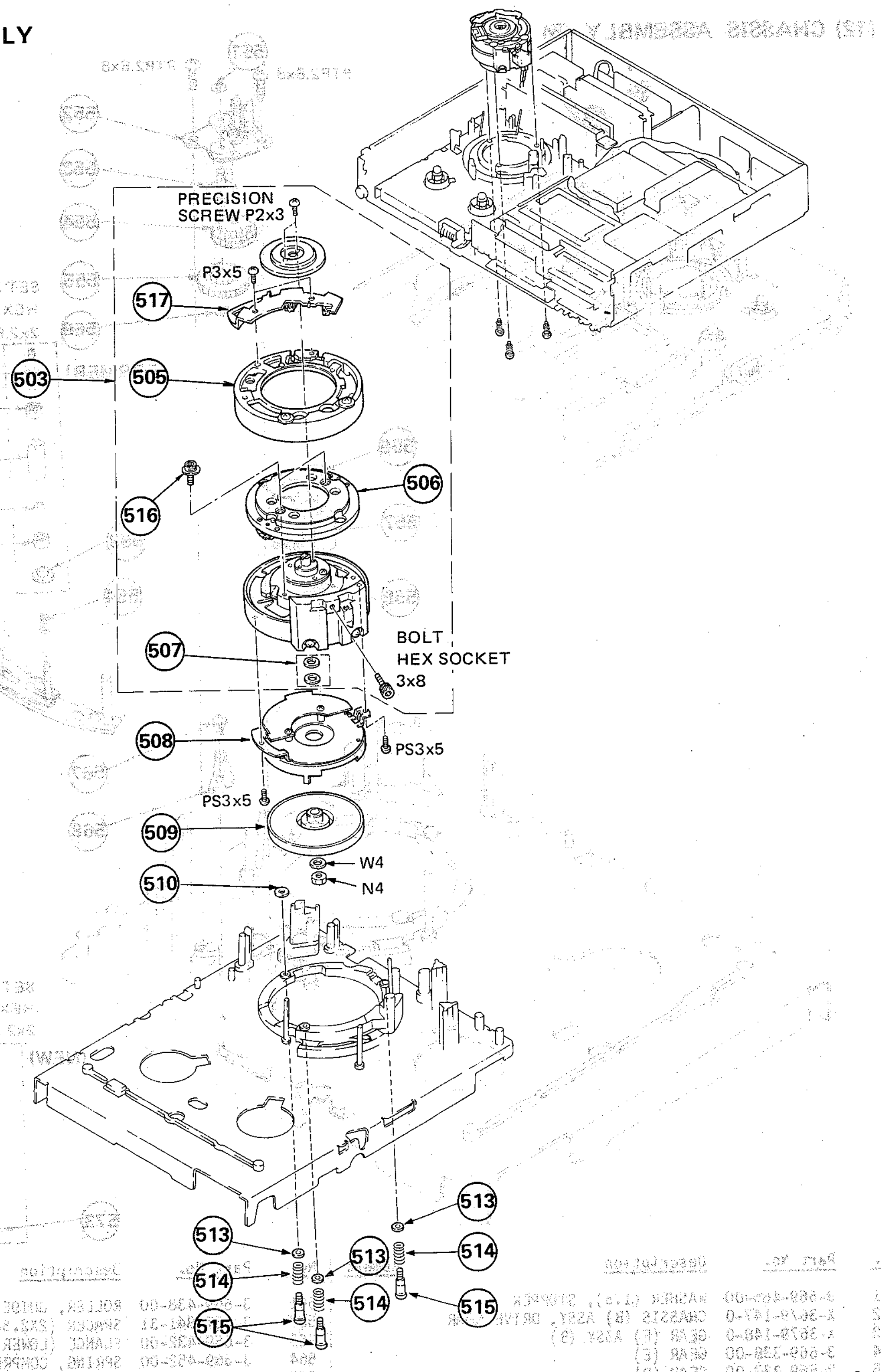
No.	Part No.	Description	Remark
401	A-6761-056-A	ACE ASSY	402,403,404
402	3-669-480-11	+ PTPWH 2	
403	•:3-669-316-00	SPRING, COMPRESSION	
404	3-669-598-00	WASHER, CTL	
405	3-669-318-00	NUT, ADJUSTMENT, GUIDE	
406	3-669-317-00	SPRING, COMPRESSION	
407	3-679-119-00	BELT, SYNCHRO	
408	3-669-596-00	WASHER (2.3), STOPPER	
409	3-679-140-00	FLANGE, GEAR, INTERNAL	
410	3-679-101-00	GEAR, INTERNAL	
411	3-679-104-00	GEAR	
412	X-3679-124-0	GEAR ASSY, PLANET	
413	X-3679-111-0	CARRIER ASSY	
414	3-679-115-00	GEAR (LARGE), LOADING	
415	•:X-3679-112-0	CHASSIS ASSY, GEAR, PLANET	
416	X-3669-321-0	GEAR (C) ASSY	
417	3-679-114-00	GEAR (SMALL), LOADING	
418	A-6737-118-A	MOTOR ASSY, L; M904	
419	•:1-605-071-00	LM-8 BOARD	
420	•:3-669-613-00	INSULATOR, L MOTOR	
421	3-701-439-11	WASHER (3)	
422	3-679-362-00	PWH 2x4	

(10) CHASSIS ASSEMBLY (4)


451
452
454
453
455
451
468
456
469
451
457
473
470
471
472
451
458
459
467
461
460
BVTT2.6x6
466
462
451
463
459
465
464
474
PTT2.6x5

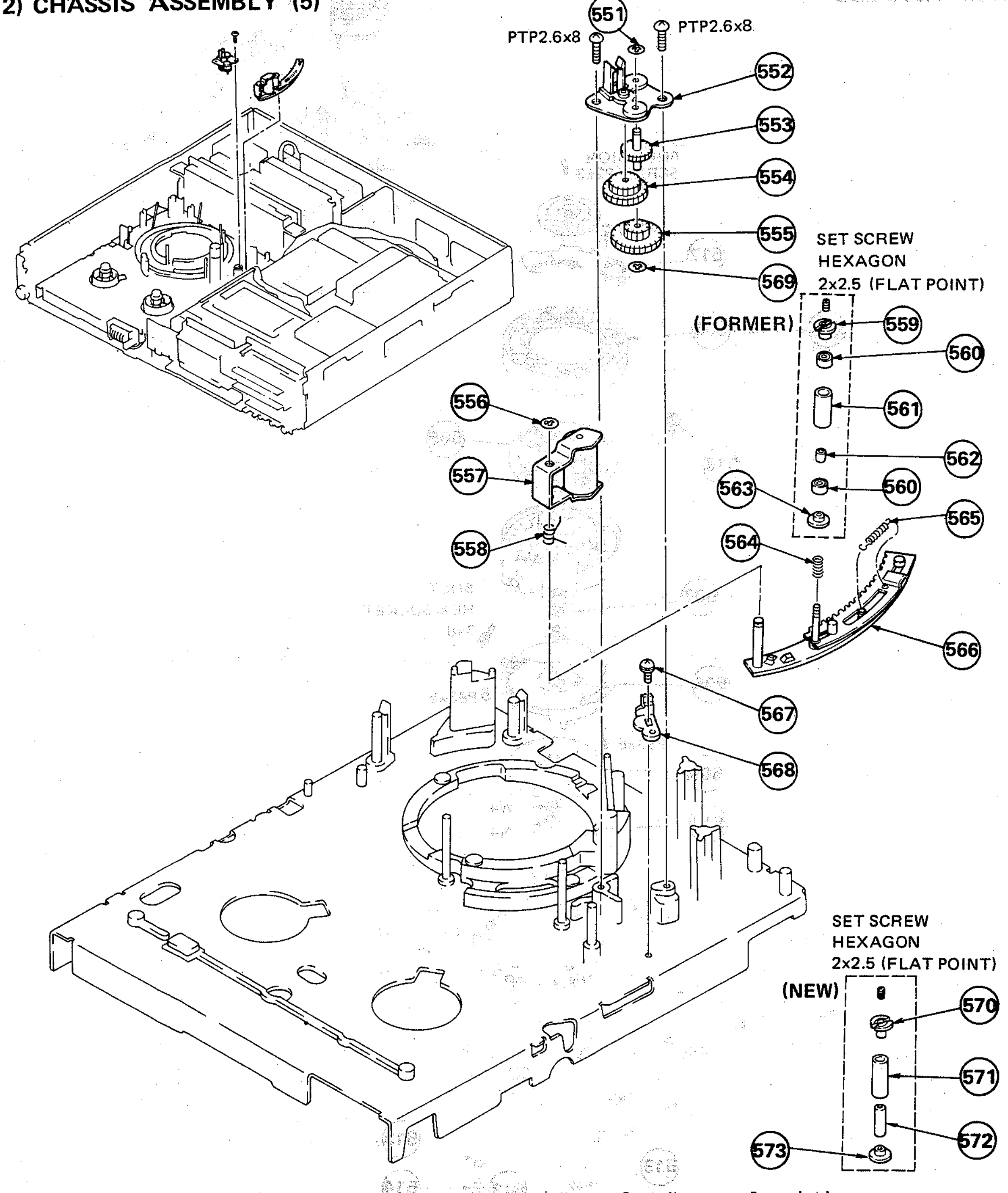
No.	Part No.	Description	Remark
451	3-669-480-11	+ PTPWH 2	
452	♠:3-672-540-00	PLATE, GROUND, TAPE GUIDE	
453	♠:3-669-618-00	PLATE (2), ADJUST	
454	♠:3-672-507-00	PLATE (3-1), ADJUSTMENT	
455	3-669-466-00	SCREW (M 2.6)	
456	3-679-290-00	GUIDE (1-YA), SHUTTLE	
457	X-3669-383-0	ARM(S) ASSY, ULE SWITCH	
458	♠:3-669-585-00	GUIDE (2), SHUTTLE	
459	3-669-465-00	WASHER (1.5), STOPPER	
460	3-669-630-00	ROLLER (C), RING	
461	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
462	♠:X-3669-329-0	PLATE ASSY, ADJUSTMENT	
463	3-669-360-00	ROLLER, RING	
464	♠:3-669-476-00	PLATE, GUIDE	
465	3-669-597-00	ROLLER (B), RING	
466	♠:3-669-477-00	LINER, LINK, PIN	
467	♠:X-3669-313-0	BASE ASSY, SLANT	
468	3-669-446-00	NUT, GUIDE	
469	3-669-447-00	FLANGE, GUIDE	
470	3-669-445-00	SPACER, GUIDE	
471	3-669-606-00	SCREW (2.6)	
472	8-825-508-10	HEAD, FE	
473	3-669-615-00	SPRING, COMPRESSION	
474	♠:3-679-163-00	PLATE, LID OPEN	

(11) DRUM ASSEMBLY


PRECISION SCREW P2x3
P3x5
517
503
505
506
516
BOLT HEX SOCKET 3x8
507
508
PS3x5
PS3x5
509
W4
N4
510
513
513
513
514
514
514
515
515

No.	Part No.	Description	Remark
503	A-6050-176-A	DRUM ASSY,(DSH-33B-R)505,506,507,516,517	
505	A-6760-123-B	DRUM UPPER ASSY	
506	A-6762-115-A	DISK ASSY	
507	X-3669-105-0	SPACER BLOCK ASSY	
508	X-2621-204-2	STATOR ASSY, D	
509	X-2621-202-0	ROTOR ASSY, D	
510	♦:3-669-646-00	SPACER, DRUM (T0.05)	
	♦:3-669-646-11	SPACER, DRUM (T0.075)	
513	3-669-600-11	WASHER, FLAT (3.5)	
514	3-429-123-00	SPRING	
515	3-669-302-00	SCREW, FITTING	
516	3-669-157-00	BOLT (WASHER) (2.6X8)	
517	A-6760-066-B	SPRING ASSY, TAPE RETAINER	

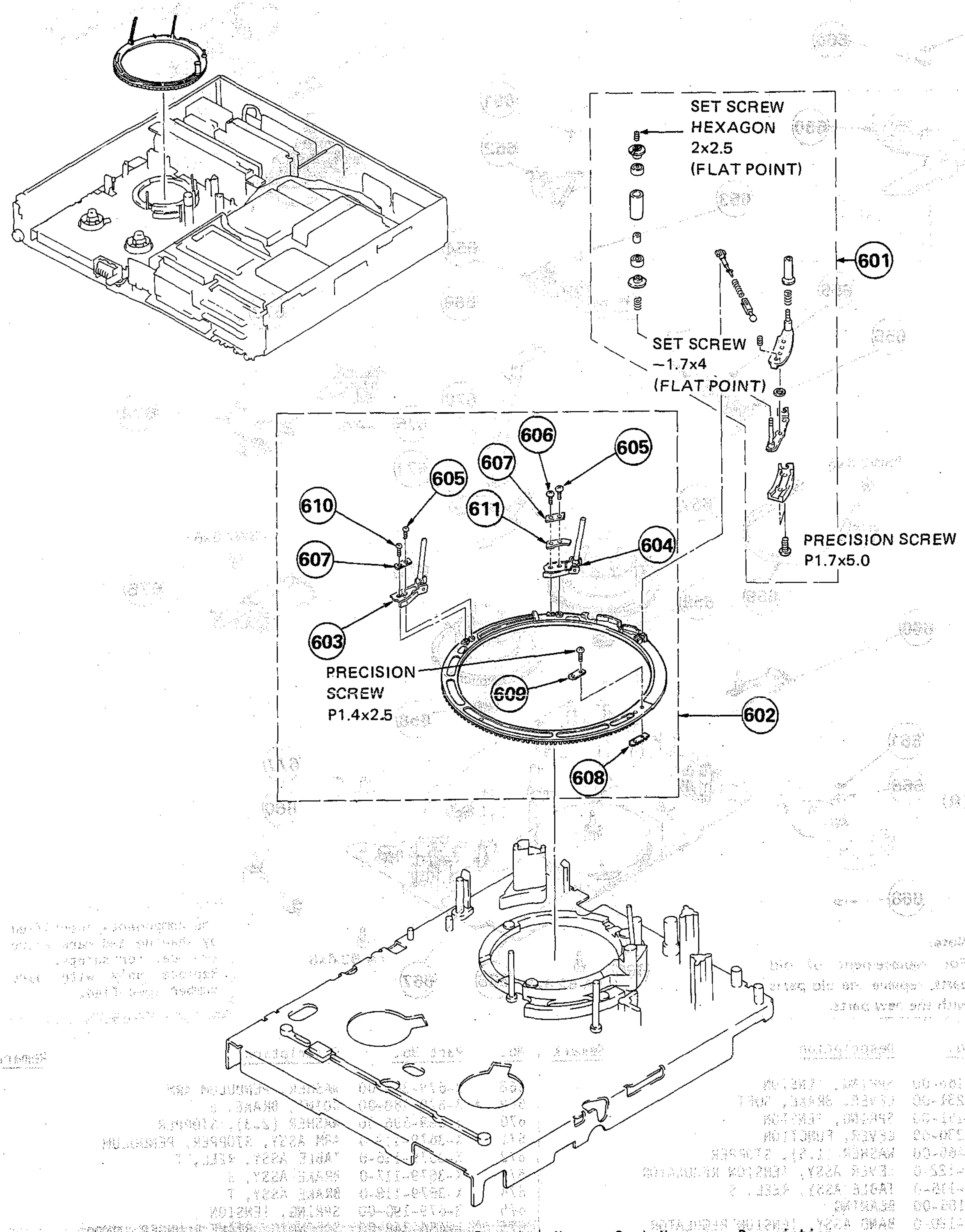
(12) CHASSIS ASSEMBLY (5)


551
PTP2.6x8
PTP2.6x8
552
553
554
555
569
SET SCREW
HEXAGON
2x2.5 (FLAT POINT)
(FORMER)
559
560
561
562
560
563
565
564
566
556
557
558
567
568
SET SCREW
HEXAGON
2x2.5 (FLAT POINT)
(NEW)
570
571
572
573

No.	Part No.	Description	Remark
551	3-669-465-00	WASHER (1.5), STOPPER	
552	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR	
553	X-3679-148-0	GEAR (F) ASSY (B)	
554	3-669-338-00	GEAR (E)	
555	3-669-337-00	GEAR (D)	
556	3-669-596-00	WASHER (2.3), STOPPER	
557	X-3669-307-0	ARM ASSY, PINCH ROLLER	
558	3-669-444-00	SPRING, TORSION	
559	3-669-431-00	FLANGE (UPPER), GUIDE	
560	3-669-443-00	BEARING, BALL (NO FLANGE)	

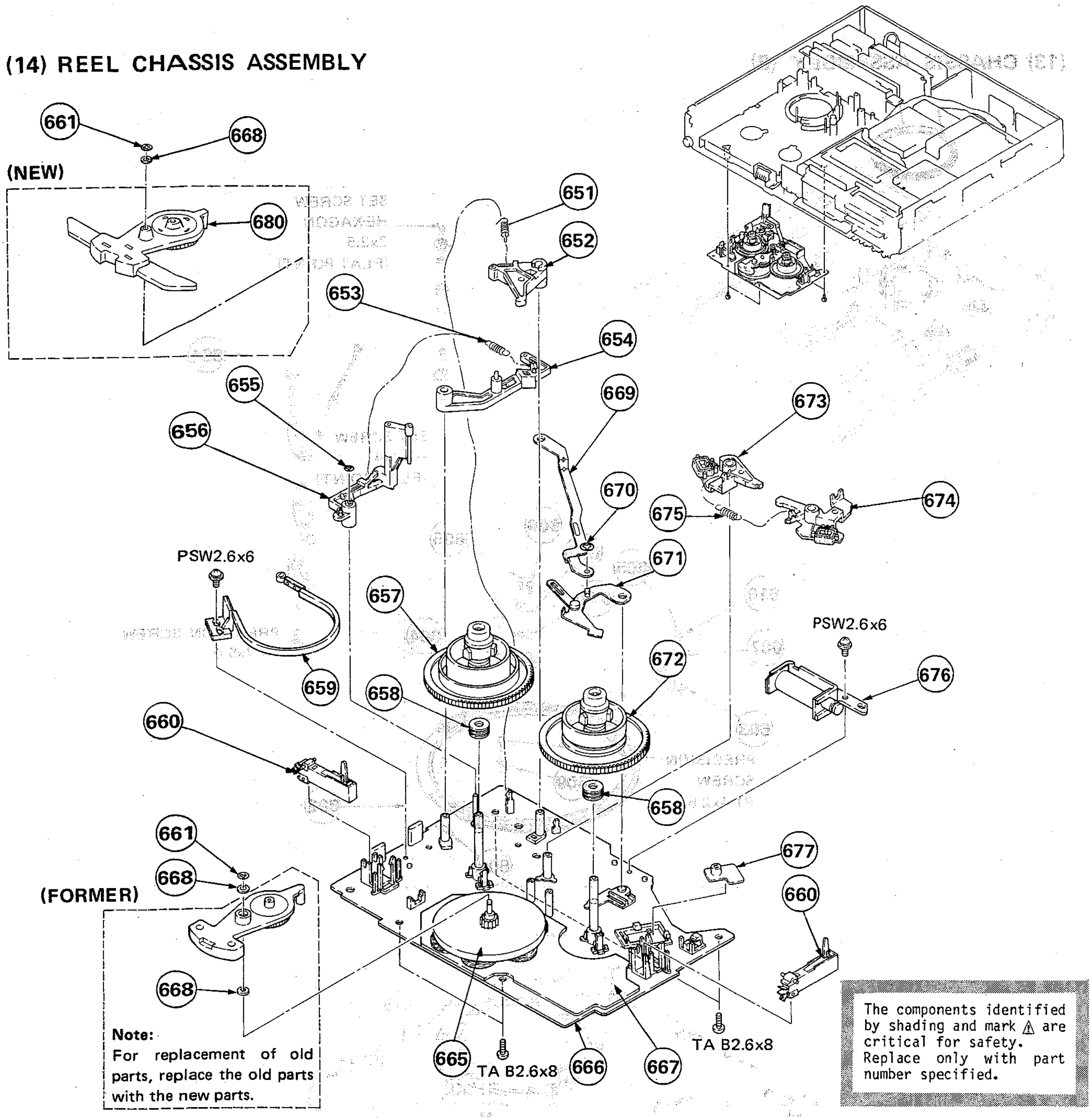
No.	Part No.	Description	Remark
561	3-669-438-00	ROLLER, GUIDE	
562	3-657-841-31	SPACER (2X2.5)	
563	3-669-432-00	FLANGE (LOWER), GUIDE	
564	3-669-452-00	SPRING, COMPRESSION	
565	3-549-014-00	SPRING, TENSION	
566	X-3679-125-0	GEAR ASSY, SLIDER	
567	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
568	♠:3-679-165-00	STOPPER, SLIDER	
569	3-669-595-00	WASHER (2), STOPPER	
570	3-676-650-00	FLANGE (UPPER) #9, GUIDE	
571	3-676-649-00	ROLLER #9, GUIDE	
572	3-672-559-00	SLEEVE, GUIDE	
573	3-672-558-00	FLANGE (LOWER) #9, GUIDE	

(13) CHASSIS ASSEMBLY (6)


SET SCREW
HEXAGON
2x2.5
(FLAT POINT)
601
SET SCREW
-1.7x4
(FLAT POINT)
606
605
607
605
610
611
604
607
PRECISION SCREW
P1.7x5.0
603
PRECISION
SCREW
P1.4x2.5
609
602
608

No.	Part No.	Description	Remark
601	A-6750-108-B	SHUTTLE BLOCK ASSY, THREADING	
602	X-3679-150-0	RING (YA) ASSY, S LOADING	603,604,605 606,607,608 609,610,611
603	X-3669-429-0	GUIDE ASSY, NO.2	
604	X-3669-430-0	GUIDE ASSY, NO.3	
605	3-669-478-00	SCREW (1X3), TAPPING	
606	3-669-479-00	SCREW (1.4X3.5), TAPPING	
607	●:3-669-472-00	RETAINER, SPRING, LEAF	
608	●:3-669-617-00	RING, GEAR	
609	●:3-669-616-00	RETAINER	
610	3-672-586-00	SCREW (1.4X3), TAPPING	
611	3-672-583-00	SPRING, LIMITER	

(14) REEL CHASSIS ASSEMBLY



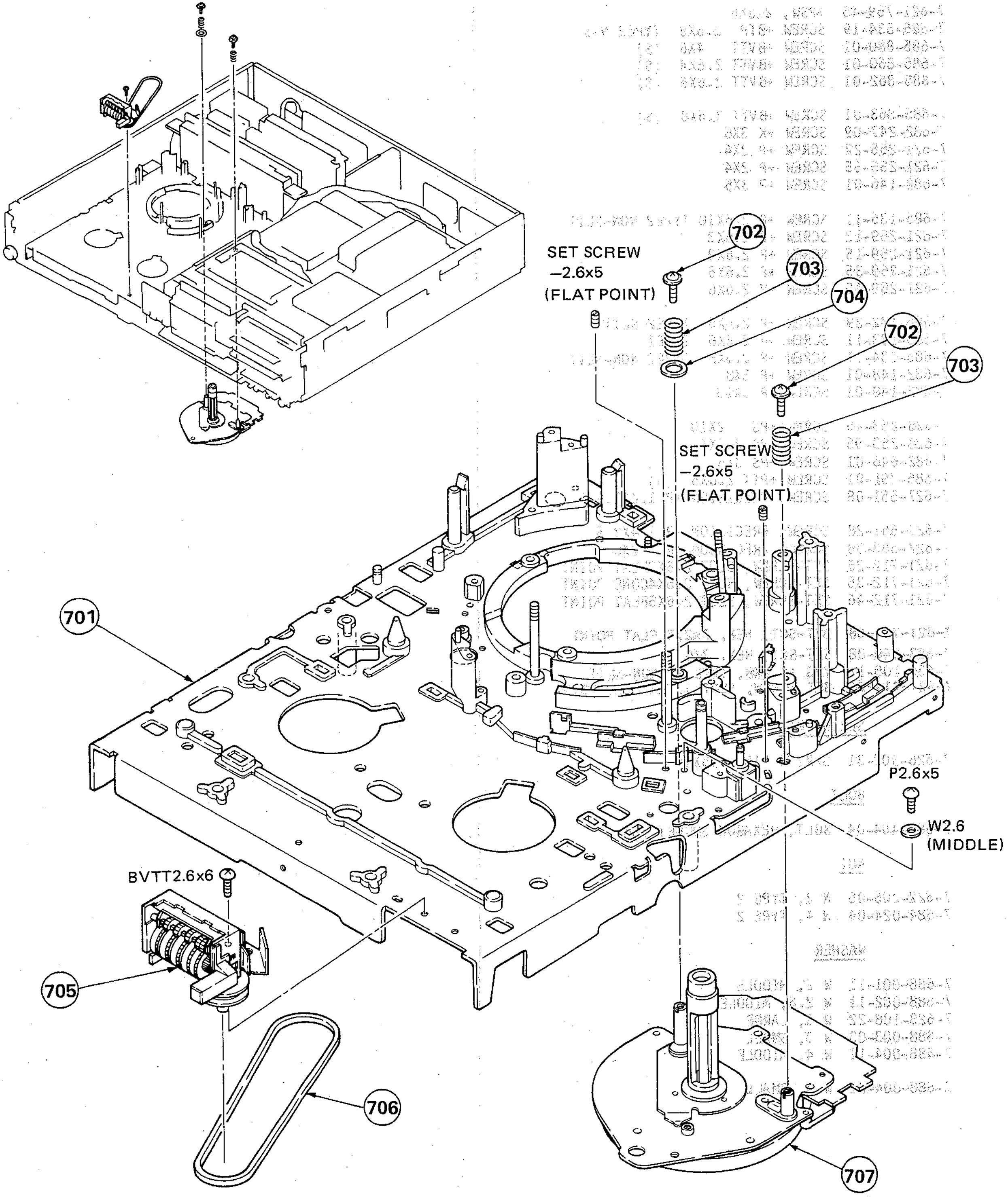
661
668
(NEW)
680
651
652
653
654
655
656
669
673
670
675
674
671
PSW2.6x6
657
672
PSW2.6x6
676
659
658
660
658
661
677
668
(FORMER)
660
668
665
TA B2.6x8
666
667
TA B2.6x8

Note:
For replacement of old parts, replace the old parts with the new parts.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
651	3-679-156-00	SPRING, TENSION	
652	♠:3-679-231-00	LEVER, BRAKE, SOFT	
653	3-679-151-00	SPRING, TENSION	
654	♠:3-679-230-00	LEVER, FUNCTION	
655	3-669-465-00	WASHER (1.5), STOPPER	
656	X-3679-122-0	LEVER ASSY, TENSION REGULATOR	
657	X-3679-115-0	TABLE ASSY, REEL, S	
658	3-646-185-00	BEARING	
659	X-3679-120-0	BAND ASSY, TENSION REGULATOR	
660	1-554-374-00	SWITCH, LEVER, S991, S992	
661	3-669-595-00	WASHER (2), STOPPER	
665	X-2622-201-0	ROTOR ASSY, R	
666	♠:X-3679-130-0	CHASSIS ASSY, SUB	
667	♠:A-4910-021-A	R STATOR BOARD, COMPLETE	
668	3-679-318-00	WASHER, PENDULUM ARM	
669	♠:3-679-168-00	JOINT, BRAKE, L	
670	3-669-596-00	WASHER (2.3), STOPPER	
671	X-3679-119-0	ARM ASSY, STOPPER, PENDULUM	
672	X-3679-116-0	TABLE ASSY, REEL, T	
673	X-3679-117-0	BRAKE ASSY, S	
674	X-3679-118-0	BRAKE ASSY, T	
675	3-679-190-00	SPRING, TENSION	
676	⚠:1-454-348-00	SOLENOID, BRAKE PLUNGER; PM902	
677	♠:1-609-231-00	RD-5 BOARD	
680	A-6759-074-H	ARM BLOCK ASSY, PENDULUM	

(15) CHASSIS ASSEMBLY (7)


702
SET SCREW
–2.6x5
(FLAT POINT)
703
704
702
703
SET SCREW
–2.6x5
(FLAT POINT)
701
P2.6x5
W2.6
(MIDDLE)
BVTT2.6x6
705
706
707

No.	Part No.	Description	Remark
701	●:X-3679-132-0	CHASSIS ASSY, MECHANICAL	
702	3-669-633-00	SCREW, + PW2	
703	3-679-359-00	SPRING, COMPRESSION	
704	3-669-697-00	SPACER, CAPSTAN	
705	1-548-571-00	COUNTER, TAPE (MIDDLE TYPE)	
706	3-679-171-00	BELT, COUNTER	
707	8-838-042-01	MOTOR, DC (BHF-1907A); M902	

SCREW

7-621-759-45	+PSW, 2.6X6
7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
7-685-880-01	SCREW +BVTT 4X6 (S)
7-685-860-01	SCREW +BVTT 2.6X4 (S)
7-685-862-01	SCREW +BVTT 2.6X6 (S)
7-685-863-01	SCREW +BVTT 2.6X8 (S)
7-682-247-09	SCREW +K 3X6
7-621-255-22	SCREW +P 2X4
7-621-255-55	SCREW +P 2X4
7-682-146-01	SCREW +P 3X5
7-685-135-11	SCREW +P 2.6X10 TYPE2 NON-SLIT
7-621-259-12	SCREW +P 2.6X3
7-621-259-15	SCREW +P 2.6X3
7-621-259-35	SCREW +P 2.6X5
7-621-259-45	SCREW +P 2.6X6
7-685-132-29	SCREW +P 2.6X5 TYPE2 SLIT
7-685-133-11	SCREW +P 2.6X6 TYPE1
7-685-134-11	SCREW +P 2.6X8 TYPE2 NON-SLIT
7-682-148-01	SCREW +P 3X8
7-682-149-01	SCREW +P 3X10
7-628-253-45	SCREW +PS 2X10
7-628-253-95	SCREW +PS 2.6X4
7-682-646-01	SCREW +PS 3X5
7-685-791-01	SCREW +PTT 2.6X5 (S)
7-627-551-08	SCREW, PRECISION +P 1.4X1.6
7-627-551-28	SCREW, PRECISION +P 1.4X2.5
7-627-553-38	SCREW, PRECISION +P 2X3
7-621-712-26	SET-SCREW, SLOT 2.6X3FLAT POINT
7-621-712-35	SET-SCREW, SLOT 2.6X4CONE POINT
7-621-712-46	SET-SCREW, SLOT 2.6X5FLAT POINT
7-621-731-08	SET-SCT, HEX. 2x2.5 FLAT POINT
7-683-240-08	SET-SCT, HEX. 3X6
7-685-105-11	TPG +P 2X8, TYPE 2, NON-SLIT
7-621-714-26	SET SCREW, SLOT 1.7x4 FLAT POINT

SPRING PIN

7-626-302-31	SPRING PIN, 2.5X14

BOLT

7-683-404-04	BOLT, HEXAGON SOCKET 3X8

NUT

7-622-205-05	N 2, TYPE 2
7-684-024-04	N 4, TYPE 2

WASHER

7-688-001-11	W 2, MIDDLE
7-688-002-11	W 2.6, MIDDLE
7-623-108-22	W 3, LARGE
7-688-003-03	W 3, SMALL
7-688-004-11	W 4, MIDDLE
7-688-004-01	W 4, SMALL

SECTION 5

ELECTRICAL PARTS LIST

NOTE:

> The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

> When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
	♠:A-4910-021-A	R STATOR BOARD, COMPLETE (REEL MOTOR BOARD) ************************************				
	♠:1-560-460-00	PIN, CONNECTOR 4P				
		CAPACITOR				
C1	1-123-821-00	ELECT	47MF	20%	16V	
C2	1-123-821-00	ELECT	47MF	20%	16V	
C3	1-123-821-00	ELECT	47MF	20%	16V	
C4	1-123-821-00	ELECT	47MF	20%	16V	
		DIODE				
D1	8-719-941-48	DIODE 1N4148TP				
		IC				
IC1	8-759-108-77	IC CX-877				
		TRANSISTOR				
Q1	8-729-100-01	TRANSISTOR 2SD992				
Q2	8-729-100-01	TRANSISTOR 2SD992				
Q3	8-729-100-01	TRANSISTOR 2SD992				
Q4	8-729-100-01	TRANSISTOR 2SD992				
Q5	8-729-100-01	TRANSISTOR 2SD992				
Q6	8-729-100-01	TRANSISTOR 2SD992				
		RESISTOR				
R1	1-247-823-00	CARBON	470	5%	1/6W	
R2	1-247-823-00	CARBON	470	5%	1/6W	
R3	1-247-823-00	CARBON	470	5%	1/6W	
R4	1-247-829-00	CARBON	820	5%	1/6W	
R5	1-247-871-00	CARBON	47K	5%	1/6W	
R6	1-247-871-00	CARBON	47K	5%	1/6W	
R7	1-247-871-00	CARBON	47K	5%	1/6W	
R8	1-247-871-00	CARBON	47K	5%	1/6W	
		DIODE				
S1	8-719-810-31	DIODE THS103-1				
S2	8-719-810-31	DIODE THS103-1				

Ref.No.	Part No.	Description				Remark
	♠:A-6711-433-A	YC-22 BOARD, COMPLETE **********************				
	3-655-214-00	CLIP, CABLE				
	♠:3-661-659-00	CASE (MAIN), SHIELD				
	♠:3-671-251-00	CASE (REAR PLATE), SHIELD				
	♠:3-679-319-00	INSULATOR				
		CAPACITOR				
C001	1-161-068-00	CERAMIC	0.0047MF	20%	50V	
C002	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C003	1-123-328-00	ELECT	4.7MF	20%	25V	
C004	1-123-332-00	ELECT	47MF	20%	16V	
C005	1-161-070-00	CERAMIC	0.01MF	20%	50V	
C006	1-123-307-00	ELECT	100MF	20%	10V	
C007	1-123-382-00	ELECT	3.3MF	20%	50V	
C008	1-161-070-00	CERAMIC	0.01MF	20%	50V	
C009	1-102-973-00	CERAMIC	100PF	5%	50V	
C010	1-102-945-00	CERAMIC	8PF	1PF	50V	
C011	1-161-070-00	CERAMIC	0.01MF	20%	50V	
C012	1-102-499-00	CERAMIC	120PF	5%	50V	
C013	1-102-973-00	CERAMIC	100PF	5%	50V	
C014	1-102-820-00	CERAMIC	330PF	5%	50V	
C015	1-123-356-00	ELECT	10MF	20%	16V	
C016	1-161-010-00	CERAMIC	0.0056MF	10%	25V	
C017	1-123-379-00	ELECT	0.47MF	20%	50V	
C018	1-102-116-00	CERAMIC	680PF	10%	50V	
C019	1-130-514-00	MYLAR	0.0068MF	10%	50V	
C020	1-130-508-00	MYLAR	0.0022MF	10%	50V	
C021	1-123-332-00	ELECT	47MF	20%	16V	
C022	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C023	1-123-307-00	ELECT	100MF	20%	10V	
C024	1-123-379-00	ELECT	0.47MF	20%	50V	
C025	1-101-888-00	CERAMIC	68PF	5%	50V	
C026	1-102-110-00	CERAMIC	220PF	10%	50V	
C027	1-123-330-00	ELECT	22MF	20%	16V	
C028	1-123-381-00	ELECT	2.2MF	20%	50V	
C029	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C030	1-102-114-00	CERAMIC	470PF	10%	50V	
C031	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C032	1-123-305-00	ELECT	33MF	20%	10V	
C033	1-102-978-00	CERAMIC	220PF	5%	50V	
C034	1-130-495-00	MYLAR	0.1MF	5%	50V	
C035	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C036	1-123-305-00	ELECT	33MF	20%	10V	
C037	1-130-489-00	MYLAR	0.033MF	5%	50V	
C038	1-123-356-00	ELECT	10MF	20%	16V	
C039	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C040	1-102-962-00	CERAMIC	30PF	5%	50V	
C041	1-101-882-00	CERAMIC	51PF	5%	50V	
C042	1-102-114-00	CERAMIC	470PF	10%	50V	
C043	1-102-962-00	CERAMIC	30PF	5%	50V	
C044	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C045	1-102-973-00	CERAMIC	100PF	5%	50V	

YC-22

Ref.No.	Part No.	Description			Remark
C046	1-102-117-00	CERAMIC	820PF	10%	50V
C047	1-123-356-00	ELECT	10MF	20%	16V
C048	1-102-973-00	CERAMIC	100PF	5%	50V
C049	1-161-013-00	CERAMIC	0.01MF	10%	25V
C050	1-161-013-00	CERAMIC	0.01MF	10%	25V
C051	1-102-116-00	CERAMIC	680PF	10%	50V
C052	1-102-116-00	CERAMIC	680PF	10%	50V
C053	1-161-070-00	CERAMIC	0.01MF	20%	50V
C054	1-123-328-00	ELECT	4.7MF	20%	25V
C055	1-102-117-00	CERAMIC	820PF	10%	50V
C056	1-131-404-00	ELECT(SOLID)	0.22MF	10%	25V
C057	1-161-072-00	CERAMIC	0.022MF	20%	50V
C058	1-123-381-00	ELECT	2.2MF	20%	50V
C059	1-161-070-00	CERAMIC	0.01MF	20%	50V
C060	1-161-070-00	CERAMIC	0.01MF	20%	50V
C061	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C062	1-102-748-00	CERAMIC	11PF	5%	50V
C063	1-161-070-00	CERAMIC	0.01MF	20%	50V
C064	1-102-962-00	CERAMIC	30PF	5%	50V
C065	1-161-070-00	CERAMIC	0.01MF	20%	50V
C066	1-123-333-00	ELECT	100MF	20%	16V
C067	1-102-808-00	CERAMIC	6PF	1PF	50V
C068	1-101-880-00	CERAMIC	47PF	5%	50V
C069	1-102-965-00	CERAMIC	39PF	5%	50V
C070	1-102-947-00	CERAMIC	10PF	5%	50V
C071	1-102-530-00	CERAMIC	120PF	5%	50V
C072	1-102-961-00	CERAMIC	27PF	5%	50V
C073	1-123-332-00	ELECT	47MF	20%	16V
C074	1-123-305-00	ELECT	33MF	20%	10V
C075	1-123-356-00	ELECT	10MF	20%	16V
C076	1-123-318-00	ELECT	33MF	20%	16V
C077	1-161-025-00	CERAMIC	0.1MF	10%	25V
C078	1-123-307-00	ELECT	100MF	20%	10V
C079	1-123-318-00	ELECT	33MF	20%	16V
C080	1-161-013-00	CERAMIC	0.01MF	10%	25V
C081	1-123-356-00	ELECT	10MF	20%	16V
C082	1-123-332-00	ELECT	47MF	20%	16V
C083	1-161-021-00	CERAMIC	0.047MF	10%	25V
C084	1-123-332-00	ELECT	47MF	20%	16V
C085	1-161-070-00	CERAMIC	0.01MF	20%	50V
C086	1-161-070-00	CERAMIC	0.01MF	20%	50V
C087	1-161-021-00	CERAMIC	0.047MF	10%	25V
C088	1-101-888-00	CERAMIC	68PF	5%	50V
C089	1-123-318-00	ELECT	33MF	20%	16V
C090	1-101-884-00	CERAMIC	56PF	5%	50V
C091	1-102-110-00	CERAMIC	220PF	10%	50V
C092	1-123-318-00	ELECT	33MF	20%	16V
C093	1-102-959-00	CERAMIC	22PF	5%	50V
C094	1-161-013-00	CERAMIC	0.01MF	10%	25V
C095	1-123-379-00	ELECT	0.47MF	20%	50V
C096	1-123-330-00	ELECT	22MF	20%	16V
C097	1-161-039-00	CERAMIC	0.001MF	10%	25V
C098	1-123-656-00	ELECT	1000MF	20%	10V
C099	1-123-295-00	ELECT	100MF	20%	6.3V
C100	1-161-070-00	CERAMIC	0.01MF	20%	50V
C101	1-161-005-00	CERAMIC	0.0022MF	10%	25V
C102	1-123-307-00	ELECT	100MF	20%	10V
C103	1-161-070-00	CERAMIC	0.01MF	20%	50V
C104	1-161-021-00	CERAMIC	0.047MF	10%	25V
C105	1-123-356-00	ELECT	10MF	20%	16V
C106	1-123-330-00	ELECT	22MF	20%	16V
C107	1-123-330-00	ELECT	22MF	20%	16V
C108	1-123-381-00	ELECT	2.2MF	20%	50V
C109	1-123-381-00	ELECT	2.2MF	20%	50V
C110	1-123-332-00	ELECT	47MF	20%	16V
C111	1-123-295-00	ELECT	100MF	20%	6.3V
C112	1-161-070-00	CERAMIC	0.01MF	20%	50V
C113	1-123-296-00	ELECT	220MF	20%	6.3V
C114	1-102-820-00	CERAMIC	330PF	5%	50V
C115	1-102-980-00	CERAMIC	270PF	5%	50V
C116	1-101-059-00	CERAMIC	510PF	5%	50V
C117	1-102-980-00	CERAMIC	270PF	5%	50V
C118	1-123-306-00	ELECT	47MF	20%	10V
C119	1-123-332-00	ELECT	47MF	20%	16V
C120	1-161-013-00	CERAMIC	0.01MF	10%	25V
C121	1-123-307-00	ELECT	100MF	20%	10V
C122	1-102-962-00	CERAMIC	30PF	5%	50V
C123	1-161-021-00	CERAMIC	0.047MF	10%	25V
C124	1-102-960-00	CERAMIC	24PF	5%	50V
C125	1-161-013-00	CERAMIC	0.01MF	10%	25V
C126	1-161-072-00	CERAMIC	0.022MF	20%	50V
C127	1-161-013-00	CERAMIC	0.01MF	10%	25V
C128	1-161-021-00	CERAMIC	0.047MF	10%	25V
C129	1-161-021-00	CERAMIC	0.047MF	10%	25V
C132	1-102-980-00	CERAMIC	270PF	5%	50V
C133	1-123-306-00	ELECT	47MF	20%	10V
C135	1-102-823-00	CERAMIC	43PF	5%	50V
C136	1-102-824-00	CERAMIC	470PF	5%	50V
C137	1-161-021-00	CERAMIC	0.047MF	10%	25V
C138	1-102-976-00	CERAMIC	180PF	5%	50V
C139	1-102-976-00	CERAMIC	180PF	5%	50V
C140	1-101-059-00	CERAMIC	510PF	5%	50V
C141	1-102-972-00	CERAMIC	91PF	5%	50V
C142	1-102-966-00	CERAMIC	43PF	5%	50V
C143	1-102-816-00	CERAMIC	120PF	5%	50V
C144	1-123-356-00	ELECT	10MF	20%	16V
C145	1-102-112-00	CERAMIC	330PF	10%	50V
C146	1-123-380-00	ELECT	1MF	20%	50V
C147	1-102-976-00	CERAMIC	180PF	5%	50V
C148	1-102-980-00	CERAMIC	270PF	5%	50V
C149	1-101-880-00	CERAMIC	47PF	5%	50V
C150	1-102-820-00	CERAMIC	330PF	5%	50V
C151	1-123-306-00	ELECT	47MF	20%	10V
C152	1-124-145-00	ELECT	330MF	20%	16V
C153	1-101-361-00	CERAMIC	150PF	5%	50V
C154	1-102-820-00	CERAMIC	330PF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description			Remark
C155	1-130-473-00	MYLAR	0.0015MF	5%	50V
C156	1-102-978-00	CERAMIC	220PF	5%	50V
C157	1-102-951-00	CERAMIC	15PF	5%	50V
C158	1-102-965-00	CERAMIC	39PF	5%	50V
C159	1-101-884-00	CERAMIC	56PF	5%	50V
C160	1-102-953-00	CERAMIC	18PF	5%	50V
C161	1-123-332-00	ELECT	47MF	20%	16V
C162	1-161-070-00	CERAMIC	0.01MF	20%	50V
C163	1-161-036-00	CERAMIC	0.047MF	20%	25V
C164	1-161-036-00	CERAMIC	0.047MF	20%	25V
C165	1-161-070-00	CERAMIC	0.01MF	20%	50V
C166	1-102-966-00	CERAMIC	43PF	5%	50V
C167	1-102-809-00	CERAMIC	7PF	1PF	50V
C168	1-102-112-00	CERAMIC	330PF	10%	50V
C169	1-161-013-00	CERAMIC	0.01MF	10%	25V
C170	1-161-013-00	CERAMIC	0.01MF	10%	25V
C171	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C172	1-102-953-00	CERAMIC	18PF	5%	50V
C173	1-102-959-00	CERAMIC	22PF	5%	50V
C174	1-102-807-00	CERAMIC	5PF	1PF	50V
C175	1-123-296-00	ELECT	220MF	20%	6.3V
C176	1-123-380-00	ELECT	1MF	20%	50V
C177	1-102-973-00	CERAMIC	100PF	5%	50V
C178	1-123-307-00	ELECT	100MF	20%	10V
C179	1-161-006-00	CERAMIC	0.0027MF	10%	25V
C180	1-161-004-00	CERAMIC	0.0018MF	10%	25V
C181	1-123-296-00	ELECT	220MF	20%	6.3V
C182	1-123-356-00	ELECT	10MF	20%	16V
C183	1-161-013-00	CERAMIC	0.01MF	10%	25V
C184	1-161-013-00	CERAMIC	0.01MF	10%	25V
C185	1-161-013-00	CERAMIC	0.01MF	10%	25V
C186	1-161-013-00	CERAMIC	0.01MF	10%	25V
C187	1-102-816-00	CERAMIC	120PF	5%	50V
C188	1-123-356-00	ELECT	10MF	20%	16V
C189	1-161-070-00	CERAMIC	0.01MF	20%	50V
C190	1-123-332-00	ELECT	47MF	20%	16V
C191	1-161-072-00	CERAMIC	0.022MF	20%	50V
C192	1-123-332-00	ELECT	47MF	20%	16V
C193	1-161-070-00	CERAMIC	0.01MF	20%	50V
C194	1-102-529-00	CERAMIC	100PF	5%	50V
C195	1-161-036-00	CERAMIC	0.047MF	20%	25V
C196	1-161-036-00	CERAMIC	0.047MF	20%	25V
C197	1-161-036-00	CERAMIC	0.047MF	20%	25V
C198	1-161-070-00	CERAMIC	0.01MF	20%	50V
C199	1-102-963-00	CERAMIC	33PF	5%	50V
C200	1-102-959-00	CERAMIC	22PF	5%	50V
C201	1-123-305-00	ELECT	33MF	20%	10V
C202	1-161-021-00	CERAMIC	0.047MF	10%	25V
C203	1-161-021-00	CERAMIC	0.047MF	10%	25V
C204	1-161-021-00	CERAMIC	0.047MF	10%	25V
C205	1-161-021-00	CERAMIC	0.047MF	10%	25V
C206	1-123-330-00	ELECT	22MF	20%	16V
C207	1-161-013-00	CERAMIC	0.01MF	10%	25V

Ref.No.	Part No.	Description			Remark
C208	1-161-021-00	CERAMIC	0.047MF	10%	25V
C209	1-123-356-00	ELECT	10MF	20%	16V
C210	1-101-884-00	CERAMIC	56PF	5%	50V
C211	1-102-963-00	CERAMIC	33PF	5%	50V
C0134	1-102-823-00	CERAMIC	43PF	5%	50V

FILTER

Ref.No.	Part No.	Description
CF001	1-527-823-00	FILTER, CERAMIC (10.7MHZ)

CONNECTOR

Ref.No.	Part No.	Description
CN001 ♠:	1-560-898-00	PIN, CONNECTOR 10P
CN002 ♠:	1-560-894-00	PIN, CONNECTOR 6P
CN003 ♠:	1-560-890-31	PIN, CONNECTOR 2P
CN004 ♠:	1-560-890-00	PIN, CONNECTOR 2P
CN005 ♠:	1-560-900-00	PIN, CONNECTOR 12P
CN006 ♠:	1-560-890-21	PIN, CONNECTOR 2P

JACK

Ref.No.	Part No.	Description
CNJ001	1-507-678-21	JACK (AUDIO OUT)
CNJ002	1-507-588-32	PIN JACK, 1P (VIDEO OUT)

DIODE

Ref.No.	Part No.	Description
D001	8-719-911-19	DIODE 1SS119
D002	8-719-911-19	DIODE 1SS119
D003	8-719-911-19	DIODE 1SS119
D004	8-719-911-19	DIODE 1SS119
D005	8-719-911-19	DIODE 1SS119
D006	8-719-911-19	DIODE 1SS119
D007	8-719-911-19	DIODE 1SS119
D008	8-719-911-19	DIODE 1SS119
D009	8-719-911-19	DIODE 1SS119
D010	8-719-911-19	DIODE 1SS119
D011	8-719-911-19	DIODE 1SS119
D012	8-719-911-19	DIODE 1SS119
D013	8-719-911-19	DIODE 1SS119
D014	8-719-911-19	DIODE 1SS119
D015	8-719-911-19	DIODE 1SS119
D016	8-719-911-19	DIODE 1SS119
D017	8-719-911-19	DIODE 1SS119
D018	8-719-911-19	DIODE 1SS119
D019	8-719-911-19	DIODE 1SS119
D020	8-719-911-19	DIODE 1SS119
D021	8-719-911-19	DIODE 1SS119
D022	8-719-911-19	DIODE 1SS119
D023	8-719-911-19	DIODE 1SS119
D024	8-719-911-19	DIODE 1SS119
D025	8-719-911-19	DIODE 1SS119

DELAY LINE

Ref.No.	Part No.	Description
DL001	1-415-283-00	DELAY LINE (1/2H)
DL002	1-415-065-00	DELAY LINE (1H)
DL003	1-415-159-00	DELAY LINE (1H)

When indicating parts by reference number, please include the board name.

YC-22

Ref.No.	Part No.	Description	Remark
		IC	
IC001	8-751-960-00	IC CX-196A	
IC002	8-758-220-00	IC CX-822	
IC003	8-751-880-00	IC CX-188	
IC004	8-759-601-87	IC CX-187	
IC005	8-751-350-00	IC CX-135	
		COIL	
L001	1-408-623-00	MICRO INDUCTOR 470UH	
L002	1-408-614-00	MICRO INDUCTOR 82UH	
L003	1-408-608-00	MICRO INDUCTOR 27UH	
L004	1-408-600-00	MICRO INDUCTOR 5.6UH	
L005	1-408-613-00	MICRO INDUCTOR 68UH	
L006	1-408-619-00	MICRO INDUCTOR 220UH	
L007	1-407-503-00	MICRO INDUCTOR 8.2MMH	
L008	1-407-747-00	MICRO INDUCTOR 56UH	
L009	1-408-611-00	MICRO INDUCTOR 47UH	
L010	1-408-615-00	MICRO INDUCTOR 100UH	
L011	1-408-616-00	MICRO INDUCTOR 120UH	
L012	1-408-614-00	MICRO INDUCTOR 82UH	
L013	1-408-617-00	MICRO INDUCTOR 150UH	
L014	1-408-615-00	MICRO INDUCTOR 100UH	
L015	1-408-613-00	MICRO INDUCTOR 68UH	
L016	1-408-614-00	MICRO INDUCTOR 82UH	
L017	1-407-718-00	MICRO INDUCTOR 1.2MMH	
L018	1-408-608-00	MICRO INDUCTOR 27UH	
L019	1-408-604-00	MICRO INDUCTOR 12UH	
L020	1-408-602-00	MICRO INDUCTOR 8.2UH	
L021	1-408-605-00	MICRO INDUCTOR 15UH	
L022	1-408-603-00	MICRO INDUCTOR 10UH	
L023	1-408-610-00	MICRO INDUCTOR 39UH	
L024	1-408-610-00	MICRO INDUCTOR 39UH	
L025	1-408-610-00	MICRO INDUCTOR 39UH	
L026	1-408-616-00	MICRO INDUCTOR 120UH	
L027	1-408-607-00	MICRO INDUCTOR 22UH	
L028	1-408-614-00	MICRO INDUCTOR 82UH	
L029	1-408-617-00	MICRO INDUCTOR 150UH	
L030	1-408-618-00	MICRO INDUCTOR 180UH	
L031	1-408-615-00	MICRO INDUCTOR 100UH	
L032	1-408-602-00	MICRO INDUCTOR 8.2UH	
L033	1-408-617-00	MICRO INDUCTOR 150UH	
L034	1-408-617-00	MICRO INDUCTOR 150UH	
L035	1-408-619-00	MICRO INDUCTOR 220UH	
L036	1-408-618-00	MICRO INDUCTOR 180UH	
L037	1-408-606-00	MICRO INDUCTOR 18UH	
L038	1-408-606-00	MICRO INDUCTOR 18UH	
L039	1-408-617-00	MICRO INDUCTOR 150UH	
L040	1-408-401-00	MICRO INDUCTOR 2.2UH	
L041	1-408-613-00	MICRO INDUCTOR 68UH	
L042	1-408-619-00	MICRO INDUCTOR 220UH	

Ref.No.	Part No.	Description	Remark
		VARIABLE COIL	
LV001	1-408-522-00	COIL, VARIABLE	
LV002	1-408-512-00	COIL, VARIABLE	
		RF UNIT	
MD001	1-464-266-00	RF UNIT, COLOR (RFU-702)	
		TRANSISTOR	
Q001	8-729-245-83	TRANSISTOR 2SC2458	
Q002	⚠8-729-245-83	TRANSISTOR 2SC2458	
Q003	8-729-245-83	TRANSISTOR 2SC2458	
Q004	8-729-117-54	TRANSISTOR 2SA1175	
Q005	8-729-117-54	TRANSISTOR 2SA1175	
Q006	8-729-245-83	TRANSISTOR 2SC2458	
Q007	8-729-178-54	TRANSISTOR 2SC2785	
Q008	8-729-117-54	TRANSISTOR 2SA1175	
Q009	⚠8-729-178-54	TRANSISTOR 2SC2785	
Q010	8-729-245-83	TRANSISTOR 2SC2458	
Q011	8-729-245-83	TRANSISTOR 2SC2458	
Q012	8-729-603-50	TRANSISTOR 2SC403SP	
Q013	8-729-245-83	TRANSISTOR 2SC2458	
Q014	8-729-245-83	TRANSISTOR 2SC2458	
Q015	8-729-245-83	TRANSISTOR 2SC2458	
Q016	8-729-178-54	TRANSISTOR 2SC2785	
Q017	8-729-245-83	TRANSISTOR 2SC2458	
Q018	8-729-245-83	TRANSISTOR 2SC2458	
Q019	8-729-245-83	TRANSISTOR 2SC2458	
Q020	8-729-245-83	TRANSISTOR 2SC2458	
Q021	8-729-245-83	TRANSISTOR 2SC2458	
Q022	8-729-178-54	TRANSISTOR 2SC2785	
Q023	8-729-178-54	TRANSISTOR 2SC2785	
Q024	8-729-245-83	TRANSISTOR 2SC2458	
Q025	8-729-245-83	TRANSISTOR 2SC2458	
Q026	8-729-603-50	TRANSISTOR 2SC403SP	
Q027	8-729-384-48	TRANSISTOR 2SA844	
Q028	8-729-603-50	TRANSISTOR 2SC403SP	
Q029	8-729-178-54	TRANSISTOR 2SC2785	
Q030	8-729-245-83	TRANSISTOR 2SC2458	
Q031	8-729-117-54	TRANSISTOR 2SA1175	
Q032	8-729-178-54	TRANSISTOR 2SC2785	
Q033	8-729-245-83	TRANSISTOR 2SC2458	
Q034	8-729-245-83	TRANSISTOR 2SC2458	
Q035	8-729-117-54	TRANSISTOR 2SA1175	
Q036	8-729-603-50	TRANSISTOR 2SC403SP	
Q037	8-729-612-77	TRANSISTOR 2SA1027R	
Q038	8-729-612-77	TRANSISTOR 2SA1027R	
Q039	8-729-603-50	TRANSISTOR 2SC403SP	
Q040	8-729-612-77	TRANSISTOR 2SA1027R	
Q041	8-729-612-77	TRANSISTOR 2SA1027R	
Q042	8-729-612-77	TRANSISTOR 2SA1027R	
Q043	8-729-612-77	TRANSISTOR 2SA1027R	
Q044	8-729-245-83	TRANSISTOR 2SC2458	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
Q045	8-729-612-77	TRANSISTOR 2SA1027R	
Q046	8-729-612-77	TRANSISTOR 2SA1027R	
Q047	8-729-612-77	TRANSISTOR 2SA1027R	
Q048	8-729-603-50	TRANSISTOR 2SC403SP	
Q049	8-729-612-77	TRANSISTOR 2SA1027R	
Q050	8-729-612-77	TRANSISTOR 2SA1027R	
Q051	8-729-245-83	TRANSISTOR 2SC2458	
Q052	8-729-178-54	TRANSISTOR 2SC2785	
Q053	8-729-178-54	TRANSISTOR 2SC2785	
Q054	8-729-603-50	TRANSISTOR 2SC403SP	
Q055	8-729-384-48	TRANSISTOR 2SA844	
Q056	8-729-603-50	TRANSISTOR 2SC403SP	
Q057	8-729-603-50	TRANSISTOR 2SC403SP	
		RESISTOR	
R001	1-247-869-00	CARBON 39K 5% 1/6W	
R002	1-247-855-00	CARBON 10K 5% 1/6W	
R003	1-246-461-00	CARBON 330 5% 1/4W	
R004	1-247-849-00	CARBON 5.6K 5% 1/6W	
R005	1-247-809-00	CARBON 120 5% 1/6W	
R006	1-247-847-00	CARBON 4.7K 5% 1/6W	
R007	1-247-848-00	CARBON 5.1K 5% 1/6W	
R008	1-247-881-00	CARBON 120K 5% 1/6W	
R009	1-247-836-00	CARBON 1.6K 5% 1/6W	
R010	1-247-841-00	CARBON 2.7K 5% 1/6W	
R011	1-247-827-00	CARBON 680 5% 1/6W	
R012	1-247-863-00	CARBON 22K 5% 1/6W	
R013	1-247-838-00	CARBON 2K 5% 1/6W	
R014	1-247-871-00	CARBON 47K 5% 1/6W	
R015	1-247-833-00	CARBON 1.2K 5% 1/6W	
R016	1-247-889-00	CARBON 270K 5% 1/6W	
R017	1-247-879-00	CARBON 100K 5% 1/6W	
R018	1-247-859-00	CARBON 15K 5% 1/6W	
R019	1-247-881-00	CARBON 120K 5% 1/6W	
R020	1-247-825-00	CARBON 560 5% 1/6W	
R021	1-247-859-00	CARBON 15K 5% 1/6W	
R022	1-247-856-00	CARBON 11K 5% 1/6W	
R023	1-247-855-00	CARBON 10K 5% 1/6W	
R024	1-247-837-00	CARBON 1.8K 5% 1/6W	
R025	1-247-855-00	CARBON 10K 5% 1/6W	
R026	1-247-807-00	CARBON 100 5% 1/6W	
R027	1-247-871-00	CARBON 47K 5% 1/6W	
R028	1-247-871-00	CARBON 47K 5% 1/6W	
R029	1-247-884-00	CARBON 160K 5% 1/6W	
R030	1-247-831-00	CARBON 1K 5% 1/6W	
R031	1-247-853-00	CARBON 8.2K 5% 1/6W	
R032	1-247-819-00	CARBON 330 5% 1/6W	
R033	1-247-819-00	CARBON 330 5% 1/6W	
R034	1-247-853-00	CARBON 8.2K 5% 1/6W	
R035	1-247-853-00	CARBON 8.2K 5% 1/6W	
R036	1-247-884-00	CARBON 160K 5% 1/6W	
R037	1-247-843-00	CARBON 3.3K 5% 1/6W	
R038	1-247-903-00	CARBON 1M 5% 1/6W	
R039	1-247-855-00	CARBON 10K 5% 1/6W	
R040	1-247-855-00	CARBON 10K 5% 1/6W	
R041	1-247-872-00	CARBON 51K 5% 1/6W	
R042	1-247-855-00	CARBON 10K 5% 1/6W	
R043	1-247-869-00	CARBON 39K 5% 1/6W	
R044	1-247-824-00	CARBON 510 5% 1/6W	
R045	1-247-855-00	CARBON 10K 5% 1/6W	
R046	1-247-872-00	CARBON 51K 5% 1/6W	
R047	1-247-851-00	CARBON 6.8K 5% 1/6W	
R048	1-247-859-00	CARBON 15K 5% 1/6W	
R050	1-247-873-00	CARBON 56K 5% 1/6W	
R051	1-247-868-00	CARBON 36K 5% 1/6W	
R052	1-247-863-00	CARBON 22K 5% 1/6W	
R053	1-247-865-00	CARBON 27K 5% 1/6W	
R054	1-247-839-00	CARBON 2.2K 5% 1/6W	
R055	1-247-825-00	CARBON 560 5% 1/6W	
R056	1-247-799-00	CARBON 47 5% 1/6W	
R057	1-247-831-00	CARBON 1K 5% 1/6W	
R058	1-247-825-00	CARBON 560 5% 1/6W	
R059	1-247-831-00	CARBON 1K 5% 1/6W	
R060	1-247-825-00	CARBON 560 5% 1/6W	
R061	1-247-825-00	CARBON 560 5% 1/6W	
R062	1-247-839-00	CARBON 2.2K 5% 1/6W	
R063	1-247-879-00	CARBON 100K 5% 1/6W	
R064	1-247-843-00	CARBON 3.3K 5% 1/6W	
R065	1-247-900-00	CARBON 750K 5% 1/6W	
R066	1-210-819-00	SOLID 1.8M 5% 1/4W	
R067	1-247-843-00	CARBON 3.3K 5% 1/6W	
R068	1-247-839-00	CARBON 2.2K 5% 1/6W	
R069	1-247-851-00	CARBON 6.8K 5% 1/6W	
R070	1-247-842-00	CARBON 3K 5% 1/6W	
R071	1-247-855-00	CARBON 10K 5% 1/6W	
R072	1-247-871-00	CARBON 47K 5% 1/6W	
R073	1-247-849-00	CARBON 5.6K 5% 1/6W	
R074	1-247-855-00	CARBON 10K 5% 1/6W	
R075	1-247-847-00	CARBON 4.7K 5% 1/6W	
R076	1-247-848-00	CARBON 5.1K 5% 1/6W	
R077	1-247-835-00	CARBON 1.5K 5% 1/6W	
R078	1-247-837-00	CARBON 1.8K 5% 1/6W	
R079	1-247-855-00	CARBON 10K 5% 1/6W	
R080	1-247-849-00	CARBON 5.6K 5% 1/6W	
R081	1-247-852-00	CARBON 7.5K 5% 1/6W	
R082	1-247-873-00	CARBON 56K 5% 1/6W	
R083	1-247-829-00	CARBON 820 5% 1/6W	
R084	1-247-831-00	CARBON 1K 5% 1/6W	
R085	1-247-829-00	CARBON 820 5% 1/6W	
R086	1-247-833-00	CARBON 1.2K 5% 1/6W	
R087	1-247-831-00	CARBON 1K 5% 1/6W	
R088	1-247-846-00	CARBON 4.3K 5% 1/6W	
R089	1-247-855-00	CARBON 10K 5% 1/6W	
R090	1-247-831-00	CARBON 1K 5% 1/6W	
R091	1-247-831-00	CARBON 1K 5% 1/6W	
R092	1-247-813-00	CARBON 180 5% 1/6W	

When indicating parts by reference number, please include the board name.

YC-22

Ref.No.	Part No.	Description				Remark
R093	1-247-809-00	CARBON	120	5%	1/6W	
R094	1-247-831-00	CARBON	1K	5%	1/6W	
R095	1-247-855-00	CARBON	10K	5%	1/6W	
R096	1-247-855-00	CARBON	10K	5%	1/6W	
R097	1-247-847-00	CARBON	4.7K	5%	1/6W	
R098	1-247-847-00	CARBON	4.7K	5%	1/6W	
R099	1-247-855-00	CARBON	10K	5%	1/6W	
R100	1-247-871-00	CARBON	47K	5%	1/6W	
R101	1-247-859-00	CARBON	15K	5%	1/6W	
R102	1-247-867-00	CARBON	33K	5%	1/6W	
R103	1-244-860-51	CARBON	300	5%	1/2W	
R104	1-247-803-00	CARBON	68	5%	1/6W	
R105	1-247-829-00	CARBON	820	5%	1/6W	
R106	1-247-831-00	CARBON	1K	5%	1/6W	
R107	1-247-849-00	CARBON	5.6K	5%	1/6W	
R108	1-247-827-00	CARBON	680	5%	1/6W	
R109	1-247-855-00	CARBON	10K	5%	1/6W	
R110	1-247-871-00	CARBON	47K	5%	1/6W	
R111	1-247-853-00	CARBON	8.2K	5%	1/6W	
R112	1-247-839-00	CARBON	2.2K	5%	1/6W	
R113	1-247-867-00	CARBON	33K	5%	1/6W	
R114	1-247-855-00	CARBON	10K	5%	1/6W	
R115	1-247-855-00	CARBON	10K	5%	1/6W	
R116	1-247-871-00	CARBON	47K	5%	1/6W	
R117	1-247-871-00	CARBON	47K	5%	1/6W	
R118	1-247-854-00	CARBON	9.1K	5%	1/6W	
R119	1-247-859-00	CARBON	15K	5%	1/6W	
R120	1-247-853-00	CARBON	8.2K	5%	1/6W	
R121	1-247-827-00	CARBON	680	5%	1/6W	
R122	1-247-847-00	CARBON	4.7K	5%	1/6W	
R123	1-247-838-00	CARBON	2K	5%	1/6W	
R124	1-247-846-00	CARBON	4.3K	5%	1/6W	
R125	1-247-807-00	CARBON	100	5%	1/6W	
R126	1-247-827-00	CARBON	680	5%	1/6W	
R127	1-247-827-00	CARBON	680	5%	1/6W	
R128	1-247-827-00	CARBON	680	5%	1/6W	
R129	1-247-827-00	CARBON	680	5%	1/6W	
R130	1-247-821-00	CARBON	390	5%	1/6W	
R131	1-247-839-00	CARBON	2.2K	5%	1/6W	
R132	1-247-809-00	CARBON	120	5%	1/6W	
R133	1-247-827-00	CARBON	680	5%	1/6W	
R134	1-247-865-00	CARBON	27K	5%	1/6W	
R135	1-247-831-00	CARBON	1K	5%	1/6W	
R136	1-247-823-00	CARBON	470	5%	1/6W	
R137	1-247-823-00	CARBON	470	5%	1/6W	
R138	1-247-833-00	CARBON	1.2K	5%	1/6W	
R139	1-247-831-00	CARBON	1K	5%	1/6W	
R140	1-247-833-00	CARBON	1.2K	5%	1/6W	
R141	1-247-839-00	CARBON	2.2K	5%	1/6W	
R142	1-247-831-00	CARBON	1K	5%	1/6W	
R143	1-247-863-00	CARBON	22K	5%	1/6W	
R144	1-247-859-00	CARBON	15K	5%	1/6W	
R145	1-247-831-00	CARBON	1K	5%	1/6W	

Ref.No.	Part No.	Description				Remark
R146	1-247-855-00	CARBON	10K	5%	1/6W	
R147	1-247-863-00	CARBON	22K	5%	1/6W	
R148	1-247-828-00	CARBON	750	5%	1/6W	
R149	1-247-840-00	CARBON	2.4K	5%	1/6W	
R150	1-247-847-00	CARBON	4.7K	5%	1/6W	
R151	1-247-855-00	CARBON	10K	5%	1/6W	
R152	1-247-863-00	CARBON	22K	5%	1/6W	
R153	1-247-828-00	CARBON	750	5%	1/6W	
R154	1-247-867-00	CARBON	33K	5%	1/6W	
R155	1-247-839-00	CARBON	2.2K	5%	1/6W	
R156	1-247-861-00	CARBON	18K	5%	1/6W	
R157	1-247-863-00	CARBON	22K	5%	1/6W	
R158	1-247-831-00	CARBON	1K	5%	1/6W	
R159	1-247-837-00	CARBON	1.8K	5%	1/6W	
R160	1-247-849-00	CARBON	5.6K	5%	1/6W	
R161	1-247-851-00	CARBON	6.8K	5%	1/6W	
R162	1-247-851-00	CARBON	6.8K	5%	1/6W	
R163	1-247-859-00	CARBON	15K	5%	1/6W	
R164	1-247-825-00	CARBON	560	5%	1/6W	
R165	1-247-831-00	CARBON	1K	5%	1/6W	
R166	1-247-824-00	CARBON	510	5%	1/6W	
R167	1-247-856-00	CARBON	11K	5%	1/6W	
R168	1-247-813-00	CARBON	180	5%	1/6W	
R169	1-247-813-00	CARBON	180	5%	1/6W	
R170	1-247-856-00	CARBON	11K	5%	1/6W	
R171	1-247-831-00	CARBON	1K	5%	1/6W	
R172	1-247-823-00	CARBON	470	5%	1/6W	
R173	1-247-811-00	CARBON	150	5%	1/6W	
R174	1-247-837-00	CARBON	1.8K	5%	1/6W	
R175	1-247-839-00	CARBON	2.2K	5%	1/6W	
R176	1-247-817-00	CARBON	270	5%	1/6W	
R177	1-247-847-00	CARBON	4.7K	5%	1/6W	
R178	1-247-835-00	CARBON	1.5K	5%	1/6W	
R179	1-247-842-00	CARBON	3K	5%	1/6W	
R180	1-247-819-00	CARBON	330	5%	1/6W	
R181	1-247-859-00	CARBON	15K	5%	1/6W	
R182	1-247-832-00	CARBON	1.1K	5%	1/6W	
R183	1-247-821-00	CARBON	390	5%	1/6W	
R184	1-247-835-00	CARBON	1.5K	5%	1/6W	
R185	1-247-831-00	CARBON	1K	5%	1/6W	
R186	1-247-847-00	CARBON	4.7K	5%	1/6W	
R187	1-247-799-00	CARBON	47	5%	1/6W	
R188	1-247-869-00	CARBON	39K	5%	1/6W	
R189	1-247-827-00	CARBON	680	5%	1/6W	
R190	1-247-871-00	CARBON	47K	5%	1/6W	
R191	1-247-865-00	CARBON	27K	5%	1/6W	
R192	1-247-851-00	CARBON	6.8K	5%	1/6W	
R193	1-247-857-00	CARBON	12K	5%	1/6W	
R194	1-247-820-00	CARBON	360	5%	1/6W	
R195	1-247-815-00	CARBON	220	5%	1/6W	
R196	1-247-839-00	CARBON	2.2K	5%	1/6W	
R197	1-247-831-00	CARBON	1K	5%	1/6W	
R198	1-247-866-00	CARBON	30K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No	Description	Remark
R199	1-247-835-00	CARBON 1.5K 5% 1/6W	
R200	1-247-826-00	CARBON 620 5% 1/6W	
R201	1-247-831-00	CARBON 1K 5% 1/6W	
R202	1-247-837-00	CARBON 1.8K 5% 1/6W	
R203	1-247-819-00	CARBON 330 5% 1/6W	
R204	1-247-839-00	CARBON 2.2K 5% 1/6W	
R205	1-247-853-00	CARBON 8.2K 5% 1/6W	
R206	1-247-857-00	CARBON 12K 5% 1/6W	
R207	1-247-831-00	CARBON 1K 5% 1/6W	
R208	1-247-823-00	CARBON 470 5% 1/6W	
R209	1-247-815-00	CARBON 220 5% 1/6W	
R210	1-247-820-00	CARBON 360 5% 1/6W	
R211	1-247-783-00	CARBON 10 5% 1/6W	
R212	1-247-835-00	CARBON 1.5K 5% 1/6W	
R213	1-247-832-00	CARBON 1.1K 5% 1/6W	
R214	1-247-861-00	CARBON 18K 5% 1/6W	
R215	1-247-845-00	CARBON 3.9K 5% 1/6W	
R216	1-247-831-00	CARBON 1K 5% 1/6W	
R217	1-247-839-00	CARBON 2.2K 5% 1/6W	
R218	1-247-822-00	CARBON 430 5% 1/6W	
R219	1-247-842-00	CARBON 3K 5% 1/6W	
R220	1-247-829-00	CARBON 820 5% 1/6W	
R221	1-247-825-00	CARBON 560 5% 1/6W	
R222	1-247-817-00	CARBON 270 5% 1/6W	
R223	1-247-807-00	CARBON 100 5% 1/6W	
R224	1-247-825-00	CARBON 560 5% 1/6W	
R225	1-247-823-00	CARBON 470 5% 1/6W	
R226	1-247-863-00	CARBON 22K 5% 1/6W	
R227	1-247-799-00	CARBON 47 5% 1/6W	
R228	1-247-855-00	CARBON 10K 5% 1/6W	
R229	1-247-807-00	CARBON 100 5% 1/6W	
R230	1-247-823-00	CARBON 470 5% 1/6W	
R231	1-247-824-00	CARBON 510 5% 1/6W	
R232	1-247-823-00	CARBON 470 5% 1/6W	
R233	1-247-823-00	CARBON 470 5% 1/6W	
R234	1-247-837-00	CARBON 1.8K 5% 1/6W	
R235	1-247-833-00	CARBON 1.2K 5% 1/6W	
R236	1-247-831-00	CARBON 1K 5% 1/6W	
R237	1-247-843-00	CARBON 3.3K 5% 1/6W	
R238	1-247-833-00	CARBON 1.2K 5% 1/6W	
R239	1-247-831-00	CARBON 1K 5% 1/6W	
R240	1-247-854-00	CARBON 9.1K 5% 1/6W	
R241	1-247-858-00	CARBON 13K 5% 1/6W	
R242	1-247-863-00	CARBON 22K 5% 1/6W	
R243	1-247-879-00	CARBON 100K 5% 1/6W	
R244	1-247-831-00	CARBON 1K 5% 1/6W	
R245	1-247-827-00	CARBON 680 5% 1/6W	
R246	1-247-799-00	CARBON 47 5% 1/6W	
R247	1-247-857-00	CARBON 12K 5% 1/6W	
R248	1-247-847-00	CARBON 4.7K 5% 1/6W	
R249	1-247-823-00	CARBON 470 5% 1/6W	
R250	1-247-839-00	CARBON 2.2K 5% 1/6W	
R251	1-247-817-00	CARBON 270 5% 1/6W	

Ref.No.	Part No.	Description	Remark
R252	1-247-807-00	CARBON 100 5% 1/6W	
R253	1-247-817-00	CARBON 270 5% 1/6W	
R254	1-247-825-00	CARBON 560 5% 1/6W	
R255	1-247-838-00	CARBON 2K 5% 1/6W	
R256	1-247-849-00	CARBON 5.6K 5% 1/6W	
R257	1-247-845-00	CARBON 3.9K 5% 1/6W	
R258	1-247-843-00	CARBON 3.3K 5% 1/6W	
R259	1-247-835-00	CARBON 1.5K 5% 1/6W	
R260	1-247-859-00	CARBON 15K 5% 1/6W	
R261	1-247-861-00	CARBON 18K 5% 1/6W	
R262 ⚠	1-247-811-00	CARBON 150 5% 1/6W	
R263	1-247-807-00	CARBON 100 5% 1/6W	
R264	1-246-465-00	CARBON 470 5% 1/4W	
R265	1-247-799-00	CARBON 47 5% 1/6W	
R266	1-247-843-00	CARBON 3.3K 5% 1/6W	
R267	1-247-804-00	CARBON 75 5% 1/6W	
R268	1-247-855-00	CARBON 10K 5% 1/6W	
R269	1-247-828-00	CARBON 750 5% 1/6W	
R270	1-247-859-00	CARBON 15K 5% 1/6W	
R271	1-247-847-00	CARBON 4.7K 5% 1/6W	
R272	1-247-815-00	CARBON 220 5% 1/6W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV001	1-228-747-00	RES, ADJ, CARBON 4.7K	
RV002	1-228-746-00	RES, ADJ, CARBON 2.2K	
RV003	1-228-748-00	RES, ADJ, CARBON 10K	
RV004	1-228-750-00	RES, ADJ, CARBON 47K	
RV005	1-228-746-00	RES, ADJ, CARBON 2.2K	
RV006	1-228-744-00	RES, ADJ, CARBON 470	
RV007	1-228-749-00	RES, ADJ, CARBON 22K	
RV008	1-228-745-00	RES, ADJ, CARBON 1K	
RV009	1-228-746-00	RES, ADJ, CARBON 2.2K	
RV010	1-228-744-00	RES, ADJ, CARBON 470	
RV011	1-228-748-00	RES, ADJ, CARBON 10K	
RV012	1-228-746-00	RES, ADJ, CARBON 2.2K	
RV013	1-228-745-00	RES, ADJ, CARBON 1K	
RV014	1-228-745-00	RES, ADJ, CARBON 1K	
RV015	1-228-745-00	RES, ADJ, CARBON 1K	
RV016	1-228-744-00	RES, ADJ, CARBON 470	
RV017	1-228-744-00	RES, ADJ, CARBON 470	
RV018	1-228-750-00	RES, ADJ, CARBON 47K	
RV019	1-228-745-00	RES, ADJ, CARBON 1K	

SWITCH

Ref.No.	Part No.	Description	Remark
S001	1-553-725-21	SWITCH, SLIDE (PCM)	

TRANSFORMER

Ref.No.	Part No.	Description	Remark
T001	1-426-083-00	TRANSFORMER, BAND PASS	
T002	1-426-082-00	TRANSFORMER, BAND PASS	
T003	1-426-081-00	TRANSFORMER, BAND PASS	
T004	1-426-078-00	TRANSFORME, VAST AMP	
T005	1-426-076-00	TRANSFORMER, EQUALIZER (1)	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

YC-22 RP-8

Ref No	Part No	Description				Remark
T006	1-426-080-00	TRANSFORMER, BAND PASS				
T007	1-426-079-00	TRANSFORMER, BAND PASS				
T008	1-426-077-00	TRANSFORMER, EQUALIZER (2)				
		CRYSTAL				
X001	1-527-396-00	CRYSTAL, OSC (3.58MHZ)				
X002	1-567-126-00	CRYSTAL, OSC (3.58MHZ)				

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Ref No	Part No	Description				Remark
	♠:A-6730-613-A	RP-8 BOARD, COMPLETE (RP BLOCK ASSY) ***********************************				
	♠:3-679-178-00	CASE (INNER) SHIELD, RP-66				
	♠:3-679-179-00	CASE (LOWER), SHIELD, RP-66				
	♠:3-679-240-00	CASE (UPPER), SHIELD, RP-55				
	♠:3-679-272-00	CASE (INNER), SHIELD, RP-55				
		CAPACITOR				
C001	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C002	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C003	1-123-380-00	ELECT	1MF	20%	50V	
C004	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C005	1-123-380-00	ELECT	1MF	20%	50V	
C006	1-123-381-00	ELECT	2.2MF	20%	50V	
C007	1-161-009-00	CERAMIC	0.0047MF	10%	25V	
C008	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C009	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C010	1-101-886-00	CERAMIC	62PF	5%	50V	
C011	1-101-886-00	CERAMIC	62PF	5%	50V	
C012	1-161-017-00	CERAMIC	0.022MF	10%	25V	
C013	1-123-356-00	ELECT	10MF	20%	16V	
C014	1-102-114-00	CERAMIC	470PF	10%	50V	
C015	1-102-973-00	CERAMIC	100PF	5%	50V	
C016	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C018	1-161-019-00	CERAMIC	0.033MF	10%	25V	
C019	1-161-017-00	CERAMIC	0.022MF	10%	25V	
C020	1-161-017-00	CERAMIC	0.022MF	10%	25V	
C021	1-102-112-00	CERAMIC	330PF	10%	50V	
C022	1-131-371-00	TANTALUM	10MF	20%	16V	
C025	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C026	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C027	1-123-330-00	ELECT	22MF	20%	16V	
C028	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C029	1-123-330-00	ELECT	22MF	20%	16V	
C030	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C031	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C032	1-161-021-00	CERAMIC	0.047MF	10%	25V	
C033	1-123-330-00	ELECT	22MF	20%	16V	
C034	1-123-305-00	ELECT	33MF	20%	10V	
C035	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C037	1-102-958-00	CERAMIC	20PF	5%	50V	
C038	1-102-960-00	CERAMIC	24PF	5%	50V	

Ref.No.	Part No.	Description				Remark
		CONNECTOR				
CN001	♠:1-508-845-00	PIN, CONNECTOR 6P				
CN002	♠:1-508-845-00	PIN, CONNECTOR 6P				
CN003	♠:1-564-030-00	PIN, CONNECTOR 5P				
CN004	♠:1-508-744-00	PIN, CONNECTOR 10P				
CN005	♠:1-564-028-00	PIN, CONNECTOR 3P				
		DIODE				
D001	8-719-911-19	DIODE 1SS119				
		IC				
IC001	8-758-620-00	IC CX-862				
IC002	8-751-340-00	IC CX-134A				
		COIL				
L001	1-408-877-00	MICRO INDUCTOR 0.22UH				
L002	1-408-877-00	MICRO INDUCTOR 0.22UH				
L003	1-408-604-00	MICRO INDUCTOR 12UH				
L004	1-408-158-00	MICRO INDUCTOR 6.8MMH				
L005	1-408-158-00	MICRO INDUCTOR 6.8MMH				
L006	1-408-604-00	MICRO INDUCTOR 12UH				
L007	1-408-616-00	MICRO INDUCTOR 120UH				
L008	1-407-717-00	MICRO INDUCTOR 1MMH				
L009	1-408-622-00	MICRO INDUCTOR 390UH				
L010	1-408-622-00	MICRO INDUCTOR 390UH				
L011	1-408-615-00	MICRO INDUCTOR 100UH				
		TRANSISTOR				
Q001	8-729-117-54	TRANSISTOR 2SA1175				
Q002	8-729-178-54	TRANSISTOR 2SC2785				
Q003	8-729-178-54	TRANSISTOR 2SC2785				
Q004	8-729-178-54	TRANSISTOR 2SC2785				
Q005	⚠.8-729-606-32	TRANSISTOR 2SC2603				
Q006	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R001	1-247-852-00	CARBON	7.5K	5%	1/6W	
R002	1-247-855-00	CARBON	10K	5%	1/6W	
R003	1-247-844-00	CARBON	3.6K	5%	1/6W	
R004	1-247-867-00	CARBON	33K	5%	1/6W	
R006	1-247-831-00	CARBON	1K	5%	1/6W	
R007	1-247-831-00	CARBON	1K	5%	1/6W	
R008	1-247-822-00	CARBON	430	5%	1/6W	
R009	1-247-779-00	CARBON	6.8	5%	1/6W	
R010	1-247-815-00	CARBON	220	5%	1/6W	
R011	⚠.1-247-028-00	CARBON	8.2	5%	1/8W	F
R012	1-247-839-00	CARBON	2.2K	5%	1/6W	
R013	1-247-839-00	CARBON	2.2K	5%	1/6W	
R014	1-247-839-00	CARBON	2.2K	5%	1/6W	
R015	1-247-839-00	CARBON	2.2K	5%	1/6W	
R016	1-247-831-00	CARBON	1K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No	Description				Remark
R017	1-247-831-00	CARBON	1K	5%	1/6W	
R018	1-247-849-00	CARBON	5.6K	5%	1/6W	
R019	1-247-833-00	CARBON	1.2K	5%	1/6W	
R020	1-247-825-00	CARBON	560	5%	1/6W	
R021	1-247-855-00	CARBON	10K	5%	1/6W	
R022	1-247-831-00	CARBON	1K	5%	1/6W	
R024	1-247-826-00	CARBON	620	5%	1/6W	
R025	1-247-839-00	CARBON	2.2K	5%	1/6W	
R026	1-247-809-00	CARBON	120	5%	1/6W	
R027	1-247-847-00	CARBON	4.7K	5%	1/6W	
R028	1-247-867-00	CARBON	33K	5%	1/6W	
R029 ⚠	1-247-028-00	CARBON	8.2	5%	1/8W	F
R030	1-247-831-00	CARBON	1K	5%	1/6W	
R031	1-247-821-00	CARBON	390	5%	1/6W	
R032	1-247-834-00	CARBON	1.3K	5%	1/6W	
R033	1-247-834-00	CARBON	1.3K	5%	1/6W	
R034	1-247-821-00	CARBON	390	5%	1/6W	
R035	1-247-844-00	CARBON	3.6K	5%	1/6W	
R036	1-247-844-00	CARBON	3.6K	5%	1/6W	
R037	1-247-807-00	CARBON	100	5%	1/6W	
R038	1-247-828-00	CARBON	750	5%	1/6W	
R039	1-247-817-00	CARBON	270	5%	1/6W	
R040	1-247-833-00	CARBON	1.2K	5%	1/6W	
R041	1-247-818-00	CARBON	300	5%	1/6W	
R042	1-247-783-00	CARBON	10	5%	1/6W	
R043	1-247-818-00	CARBON	300	5%	1/6W	
R044	1-247-783-00	CARBON	10	5%	1/6W	
R045	1-247-863-00	CARBON	22K	5%	1/6W	
R046	1-247-855-00	CARBON	10K	5%	1/6W	
R047	1-247-844-00	CARBON	3.6K	5%	1/6W	
R048	1-247-855-00	CARBON	10K	5%	1/6W	
R049	1-247-845-00	CARBON	3.9K	5%	1/6W	

VARIABLE RESISTOR

Ref.No	Part No	Description
RV001	1-228-920-00	RES, ADJ, CARBON 2.2K
RV002	1-228-920-00	RES, ADJ, CARBON 2.2K
RV003	1-228-919-00	RES, ADJ, CARBON 1K
RV004	1-228-919-00	RES, ADJ, CARBON 1K
RV005	1-228-921-00	RES, ADJ, CARBON 4.7K
RV006	1-228-747-00	RES, ADJ, CARBON 4.7K

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♠:A-6721-166-A TA-12 BOARD, COMPLETE
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Part No	Description
1-463-377-00	TUNER (BT-864)
♠:1-556-685-00	CABLE, PIN
♠:3-679-120-00	CASE (UPPER), SHIELD, T
♠:3-679-121-00	CASE (INNER), SHIELD, T
♠:3-679-122-00	CASE (LOWER), SHIELD, T
♠:3-679-174-00	CASE (UPPER), SHIELD, AU-33
♠:3-679-175-00	CASE (INNER), SHIELD, AU-33
♠:3-679-176-00	CASE (LOWER), SHIELD, AU-33
♠:3-679-177-00	CASE (LOWER), SHIELD, AU-44
♠:3-679-239-00	CASE (INNER), SHIELD, AU-44
4-812-134-11	RIVET NYLON, 3.5

CAPACITOR

Ref.No.	Part No.	Description				Remark
C001	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C002	1-130-487-00	MYLAR	0.022MF	5%	50V	
C003	1-123-608-00	ELECT	0.22MF	20%	50V	
C004	1-123-608-00	ELECT	0.22MF	20%	50V	
C005	1-102-526-00	CERAMIC	75PF	5%	50V	
C006	1-123-333-00	ELECT	100MF	20%	16V	
C007	1-101-004-00	CERAMIC	0.01MF		50V	
C008	1-101-006-00	CERAMIC	0.047MF		50V	
C009	1-101-884-00	CERAMIC	56PF	5%	50V	
C010	1-101-884-00	CERAMIC	56PF	5%	50V	
C011	1-123-356-00	ELECT	10MF	20%	16V	
C012	1-130-485-00	MYLAR	0.015MF	5%	50V	
C013	1-102-513-00	CERAMIC	18PF	5%	50V	
C014	1-102-495-00	CERAMIC	75PF	5%	50V	
C015	1-123-380-00	ELECT	1MF	20%	50V	
C016	1-123-330-00	ELECT	22MF	20%	16V	
C017	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C018	1-123-380-00	ELECT	1MF	20%	50V	
C019	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C020	1-123-379-00	ELECT	0.47MF	20%	50V	
C021	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C022	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C023	1-123-379-00	ELECT	0.47MF	20%	50V	
C024	1-102-816-00	CERAMIC	120PF	5%	50V	
C025	1-123-333-00	ELECT	100MF	20%	16V	
C026	1-102-514-00	CERAMIC	22PF	5%	50V	
C027	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C028	1-123-382-00	ELECT	3.3MF	20%	100V	
C029	1-123-330-00	ELECT	22MF	20%	16V	
C030	1-123-330-00	ELECT	22MF	20%	16V	
C031	1-130-632-00	MYLAR	0.1MF	10%	50V	
C032	1-130-620-00	MYLAR	0.01MF	10%	50V	
C033	1-123-330-00	ELECT	22MF	20%	16V	
C034	1-123-318-00	ELECT	33MF	20%	16V	
C035	1-161-036-00	CERAMIC	0.047MF	20%	25V	
C036	1-123-330-00	ELECT	22MF	20%	16V	
C037	1-123-381-00	ELECT	2.2MF	20%	50V	
C038	1-123-380-00	ELECT	1MF	20%	50V	
C039	1-130-620-00	MYLAR	0.01MF	10%	50V	
C502	1-123-332-00	ELECT	47MF	20%	16V	
C503	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C504	1-130-477-00	MYLAR	0.0033MF	5%	50V	
C505	1-102-110-00	CERAMIC	220PF	10%	50V	
C506	1-130-472-00	MYLAR	0.0012MF	5%	50V	
C507	1-123-381-00	ELECT	2.2MF	20%	50V	
C508	1-123-382-00	ELECT	3.3MF	20%	50V	
C509	1-136-051-00	FILM	0.0039MF	10%	630V	
C510	1-130-475-00	MYLAR	0.0022MF	5%	50V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TA-12

Ref.No	Part No	Description			Remark
C511	1-123-356-00	ELECT	10MF	20%	16V
C512	1-130-471-00	MYLAR	0.001MF	5%	50V
C513	1-107-166-00	MICA	62PF	5%	500V
C514	1-123-333-00	ELECT	100MF	20%	16V
C515	1-130-477-00	MYLAR	0.0033MF	5%	50V
C517	1-123-382-00	ELECT	3.3MF	20%	50V
C518	1-123-330-00	ELECT	22MF	20%	16V
C519	1-123-356-00	ELECT	10MF	20%	16V
C520	1-101-059-00	CERAMIC	510PF	5%	50V
C521	1-123-328-00	ELECT	4.7MF	20%	25V
C522	1-130-497-00	MYLAR	0.15MF	5%	50V
C523	1-123-328-00	ELECT	4.7MF	20%	25V
C524	1-123-333-00	ELECT	100MF	20%	16V
C525	1-130-482-00	MYLAR	0.0082MF	5%	50V
C526	1-123-328-00	ELECT	4.7MF	20%	25V
C528	1-130-483-00	MYLAR	0.01MF	5%	50V
C530	1-123-296-00	ELECT	220MF	20%	6.3V
C531	1-123-380-00	ELECT	1MF	20%	50V
C533	1-130-468-00	MYLAR	560PF	5%	50V
C534	1-123-379-00	ELECT	0.47MF	20%	50V
C535	1-123-330-00	ELECT	22MF	20%	16V
C536	1-161-021-00	CERAMIC	0.047MF	10%	25V
C537	1-130-472-00	MYLAR	0.0012MF	5%	50V
		FILTER			
CF001	1-409-332-00	CERAMIC TRAP (4.5MHZ)			
CF002	1-527-260-00	FILTER, CERAMIC (4.5MHZ)			
CF003	1-409-332-00	CERAMIC TRAP (4.5MHZ)			
		CONNECTOR			
CN001	♠:1-560-894-00	PIN, CONNECTOR 6P			
CN002	♠:1-560-896-00	PIN, CONNECTOR 8P			
CN003	♠:1-560-896-00	PIN, CONNECTOR 8P			
CN004	♠:1-560-896-00	PIN, CONNECTOR 8P			
CN005	♠:1-560-896-00	PIN, CONNECTOR 8P			
CN501	♠:1-560-892-21	PIN, CONNECTOR 4P			
CN502	♠:1-560-897-00	PIN, CONNECTOR 9P			
CN503	♠:1-560-890-21	PIN, CONNECTOR 2P			
CN504	♠:1-560-893-00	PIN, CONNECTOR 5P			
		DIODE			
D001	8-719-911-19	DIODE 1SS119			
D002	8-719-911-19	DIODE 1SS119			
D003	8-719-911-19	DIODE 1SS119			
D004	8-719-911-19	DIODE 1SS119			
D005	8-719-911-19	DIODE 1SS119			
D006	8-719-911-19	DIODE 1SS119			
D007	8-719-911-19	DIODE 1SS119			
D008	8-719-911-19	DIODE 1SS119			
D009	8-719-911-19	DIODE 1SS119			
D501	8-719-911-19	DIODE 1SS119			
D502	8-719-911-19	DIODE 1SS119			

Ref.No.	Part No.	Description			Remark
		IC			
IC001	8-758-852-00	IC CX-885B			
IC002	8-759-157-40	IC UPC574J			
IC501	8-759-800-46	IC LA7046			
		COIL			
L001	1-408-591-31	MICRO INDUCTOR 1UH			
L002	1-408-597-00	MICRO INDUCTOR 3.3UH			
L003	1-408-608-00	MICRO INDUCTOR 27UH			
L004	1-408-603-00	MICRO INDUCTOR 10UH			
L005	1-408-602-00	MICRO INDUCTOR 8.2UH			
L006	1-408-604-00	MICRO INDUCTOR 12UH			
L007	1-408-606-00	MICRO INDUCTOR 18UH			
L008	1-408-611-00	MICRO INDUCTOR 47UH			
L009	1-407-716-00	MICRO INDUCTOR 820UH			
L010	1-407-716-00	MICRO INDUCTOR 820UH			
L501	1-407-718-00	MICRO INDUCTOR 1.2MMH			
L502	1-407-508-00	MICRO INDUCTOR 22UH			
		VARIABLE COIL			
LV501	1-408-523-00	COIL, VARIABLE			
		VOLUME BLOCK			
PS001	1-230-074-00	VOLUME BLOCK, PRESET			
		TRANSISTOR			
Q001	8-729-178-54	TRANSISTOR 2SC2785			
Q002	8-729-178-54	TRANSISTOR 2SC2785			
Q003	8-729-178-54	TRANSISTOR 2SC2785			
Q004	8-729-117-54	TRANSISTOR 2SA1175			
Q005	8-729-117-54	TRANSISTOR 2SA1175			
Q006	8-729-178-54	TRANSISTOR 2SC2785			
Q007	8-769-193-09	TRANSISTOR 2SK43-3			
Q008	8-729-117-54	TRANSISTOR 2SA1175			
Q009	8-729-117-54	TRANSISTOR 2SA1175			
Q010	8-729-117-54	TRANSISTOR 2SA1175			
Q501	8-729-177-43	TRANSISTOR 2SD774			
Q502	8-729-194-57	TRANSISTOR 2SC945-P			
Q503	8-729-194-57	TRANSISTOR 2SC945-P			
Q504	8-729-117-54	TRANSISTOR 2SA1175			
Q505	8-729-117-54	TRANSISTOR 2SA1175			
Q506	8-729-178-54	TRANSISTOR 2SC2785			
Q507	8-729-178-54	TRANSISTOR 2SC2785			
Q509	8-729-178-54	TRANSISTOR 2SC2785			
Q510	8-729-178-54	TRANSISTOR 2SC2785			
		RESISTOR			
R001	1-247-839-00	CARBON	2.2K	5%	1/6W
R002	1-247-845-00	CARBON	3.9K	5%	1/6W
R003	1-247-879-00	CARBON	100K	5%	1/6W
R004	1-247-869-00	CARBON	39K	5%	1/6W
R005	1-247-829-00	CARBON	820	5%	1/6W

When indicating parts by reference number, please include the board name.

Ref No	Part No	Description	Remark
R006	1-247-799-00	CARBON 47 5% 1/6W	
R007	1-247-891-00	CARBON 330K 5% 1/6W	
R008 ⚠	1-247-033-00	CARBON 100 5% 1/8W	F
R009	1-247-839-00	CARBON 2.2K 5% 1/6W	
R010	1-247-865-00	CARBON 27K 5% 1/6W	
R011	1-247-843-00	CARBON 3.3K 5% 1/6W	
R012	1-247-831-00	CARBON 1K 5% 1/6W	
R013	1-247-871-00	CARBON 47K 5% 1/6W	
R014	1-247-873-00	CARBON 56K 5% 1/6W	
R015	1-247-831-00	CARBON 1K 5% 1/6W	
R016	1-247-855-00	CARBON 10K 5% 1/6W	
R017	1-247-831-00	CARBON 1K 5% 1/6W	
R018	1-247-843-00	CARBON 3.3K 5% 1/6W	
R019	1-247-831-00	CARBON 1K 5% 1/6W	
R020	1-247-831-00	CARBON 1K 5% 1/6W	
R021	1-247-873-00	CARBON 56K 5% 1/6W	
R022	1-247-847-00	CARBON 4.7K 5% 1/6W	
R023	1-247-821-00	CARBON 390 5% 1/6W	
R024	1-247-821-00	CARBON 390 5% 1/6W	
R025	1-247-827-00	CARBON 680 5% 1/6W	
R026	1-247-847-00	CARBON 4.7K 5% 1/6W	
R027	1-247-817-00	CARBON 270 5% 1/6W	
R028	1-247-843-00	CARBON 3.3K 5% 1/6W	
R029	1-247-879-00	CARBON 100K 5% 1/6W	
R030	1-247-863-00	CARBON 22K 5% 1/6W	
R031	1-247-863-00	CARBON 22K 5% 1/6W	
R032	1-247-871-00	CARBON 47K 5% 1/6W	
R033	1-247-867-00	CARBON 33K 5% 1/6W	
R034	1-247-879-00	CARBON 100K 5% 1/6W	
R035	1-247-847-00	CARBON 4.7K 5% 1/6W	
R036	1-247-855-00	CARBON 10K 5% 1/6W	
R037	1-247-879-00	CARBON 100K 5% 1/6W	
R038	1-244-863-00	CARBON 390 5% 1/2W	
R039	1-247-900-00	CARBON 750K 5% 1/6W	
R040	1-247-903-00	CARBON 1M 5% 1/6W	
R041	1-247-885-00	CARBON 180K 5% 1/6W	
R042	1-247-869-00	CARBON 39K 5% 1/6W	
R043 ⚠	1-211-646-00	CARBON 2.2K 5% 1/2W	F
R044	1-202-735-00	SOLID 22M 10% 1/2W	
R045	1-247-879-00	CARBON 100K 5% 1/6W	
R046	1-247-799-00	CARBON 47 5% 1/6W	
R047	1-247-871-00	CARBON 47K 5% 1/6W	
R048	1-247-871-00	CARBON 47K 5% 1/6W	
R049	1-247-871-00	CARBON 47K 5% 1/6W	
R050	1-247-831-00	CARBON 1K 5% 1/6W	
R051	1-247-831-00	CARBON 1K 5% 1/6W	
R052	1-247-831-00	CARBON 1K 5% 1/6W	
R053	1-247-831-00	CARBON 1K 5% 1/6W	
R054	1-247-831-00	CARBON 1K 5% 1/6W	
R055	1-247-831-00	CARBON 1K 5% 1/6W	
R056	1-247-831-00	CARBON 1K 5% 1/6W	
R057	1-247-831-00	CARBON 1K 5% 1/6W	
R058	1-247-831-00	CARBON 1K 5% 1/6W	
R059	1-247-831-00	CARBON 1K 5% 1/6W	
R060	1-247-831-00	CARBON 1K 5% 1/6W	
R061	1-247-831-00	CARBON 1K 5% 1/6W	
R062	1-247-831-00	CARBON 1K 5% 1/6W	
R063	1-247-831-00	CARBON 1K 5% 1/6W	
R070	1-247-843-00	CARBON 3.3K 5% 1/6W	
R071	1-247-863-00	CARBON 22K 5% 1/6W	
R072	1-246-497-00	CARBON 10K 1% 1/4W	
R501	1-247-859-00	CARBON 15K 5% 1/6W	
R502	1-247-859-00	CARBON 15K 5% 1/6W	
R503	1-247-783-00	CARBON 10 5% 1/6W	
R504 ⚠	1-246-980-00	CARBON 3.3 5% 1/8W	F
R505	1-247-839-00	CARBON 2.2K 5% 1/6W	
R506	1-247-883-00	CARBON 150K 5% 1/6W	
R507	1-247-867-00	CARBON 33K 5% 1/6W	
R508	1-247-893-00	CARBON 390K 5% 1/6W	
R509	1-247-807-00	CARBON 100 5% 1/6W	
R510	1-247-839-00	CARBON 2.2K 5% 1/6W	
R511	1-247-839-00	CARBON 2.2K 5% 1/6W	
R512	1-247-903-00	CARBON 1M 5% 1/6W	
R513	1-247-863-00	CARBON 22K 5% 1/6W	
R514	1-247-849-00	CARBON 5.6K 5% 1/6W	
R515	1-247-855-00	CARBON 10K 5% 1/6W	
R516	1-247-865-00	CARBON 27K 5% 1/6W	
R517	1-247-847-00	CARBON 4.7K 5% 1/6W	
R518	1-247-855-00	CARBON 10K 5% 1/6W	
R519	1-247-869-00	CARBON 39K 5% 1/6W	
R520	1-247-843-00	CARBON 3.3K 5% 1/6W	
R521	1-247-855-00	CARBON 10K 5% 1/6W	
R522	1-247-839-00	CARBON 2.2K 5% 1/6W	
R523	1-247-871-00	CARBON 47K 5% 1/6W	
R524	1-247-855-00	CARBON 10K 5% 1/6W	
R525	1-247-867-00	CARBON 33K 5% 1/6W	
R527	1-247-847-00	CARBON 4.7K 5% 1/6W	
R528	1-247-831-00	CARBON 1K 5% 1/6W	
R529	1-247-783-00	CARBON 10 5% 1/6W	
R530	1-247-863-00	CARBON 22K 5% 1/6W	
R531	1-247-863-00	CARBON 22K 5% 1/6W	
R533	1-247-877-00	CARBON 82K 5% 1/6W	
R534	1-247-865-00	CARBON 27K 5% 1/6W	
R535	1-247-821-00	CARBON 390 5% 1/6W	
R536	1-247-844-00	CARBON 3.6K 5% 1/6W	
R537	1-247-815-00	CARBON 220 5% 1/6W	
R538	1-210-825-00	SOLID 3.3M 5% 1/4W	
R540	1-247-851-00	CARBON 6.8K 5% 1/6W	
R541	1-247-871-00	CARBON 47K 5% 1/6W	
R542	1-247-823-00	CARBON 470 5% 1/6W	
R545 ⚠	1-217-393-00	FUSIBLE 33 5% 1/4W	F
R546	1-247-863-00	CARBON 22K 5% 1/6W	

VARIABLE RESISTOR

Ref No	Part No	Description	Remark
RV001	1-228-747-00	RES, ADJ, CARBON 4.7K	
RV002	1-228-747-00	RES, ADJ, CARBON 4.7K	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
RV501	1-224-256-XX	RES, ADJ, METAL GLAZE 220K				
RV502	1-228-752-00	RES, ADJ, CARBON 220K				
RV503	1-228-744-00	RES, ADJ, CARBON 470				
RV504	1-228-748-00	RES, ADJ, CARBON 10K				
		SWITCH				
S001	1-554-373-00	SWITCH, LEVER (AFT)				
		FILTER				
SF001	1-404-227-51	SAWF				
		TRANSFORMER				
T001	1-404-153-00	VIFT				
T002	1-404-321-00	VIFT				
T003	1-404-352-00	COIL, VIF				
T004	1-404-352-00	COIL, VIF				
T005	1-404-411-00	COIL, SIF				
T501	1-433-237-00	TRANSFORMER, OSCILLATOR				
**						
	♠:1-606-794-00	N BOARD *******				
	♠:4-342-117-00	CASE, SHIELD (MAIN), R				
	♠:4-342-118-00	LID, SHIELD CASE, R				
		CAPACITOR				
C001	1-123-617-00	ELECT	10MF	20%	16V	
C002	1-123-617-00	ELECT	10MF	20%	16V	
C003	1-123-617-00	ELECT	10MF	20%	16V	
C004	1-161-019-00	CERAMIC	0.033MF	10%	25V	
C005	1-108-567-00	MYLAR	0.0033MF	5%	50V	
C006	1-123-821-00	ELECT	47MF	20%	16V	
		DIODE				
D001	8-719-110-32	DIODE PH302B				
		IC				
IC001	8-759-113-73	IC UPC1373H				
		COIL				
L001	1-404-310-00	COIL				
**						
	♠:1-610-028-00	TS-23 BOARD ***********				
		CAPACITOR				
C201	1-161-025-00	CERAMIC	0.1MF	10%	25V	
C202	1-123-306-00	ELECT	47MF	20%	10V	
C203	1-101-004-00	CERAMIC	0.01MF		50V	

Ref.No.	Part No.	Description				Remark
C204	1-123-306-00	ELECT	47MF	20%	10V	
		DIODE				
D101	8-719-104-45	DIODE SG213T				
D102	8-719-104-45	DIODE SG213T				
D103	8-719-104-45	DIODE SG213T				
D104	8-719-104-45	DIODE SG213T				
D105	8-719-104-45	DIODE SG213T				
D106	8-719-104-45	DIODE SG213T				
D107	8-719-104-45	DIODE SG213T				
D108	8-719-104-45	DIODE SG213T				
D109	8-719-104-45	DIODE SG213T				
D110	8-719-104-45	DIODE SG213T				
D111	8-719-104-45	DIODE SG213T				
D112	8-719-104-45	DIODE SG213T				
D113	8-719-104-45	DIODE SG213T				
D114	8-719-104-45	DIODE SG213T				
D201	8-719-100-43	DIODE RD7.5EB1				
		INDICATOR TUBE				
FL201	1-519-289-00	INDICATOR TUBE, FLUORESCENT				
		IC				
IC201	8-759-905-28	IC LR3466				
		TRANSISTOR				
Q201	8-729-117-54	TRANSISTOR 2SA1175				
Q202	8-729-178-54	TRANSISTOR 2SC2785				
Q203	8-729-178-54	TRANSISTOR 2SC2785				
Q205	8-729-117-54	TRANSISTOR 2SA1175				
Q206	8-729-117-54	TRANSISTOR 2SA1175				
Q207	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R201	1-247-863-00	CARBON	22K	5%	1/6W	
R202	1-247-863-00	CARBON	22K	5%	1/6W	
R203	1-247-879-00	CARBON	100K	5%	1/6W	
R204	1-247-875-00	CARBON	68K	5%	1/6W	
R205	1-247-879-00	CARBON	100K	5%	1/6W	
R206	1-247-879-00	CARBON	100K	5%	1/6W	
R207	1-247-863-00	CARBON	22K	5%	1/6W	
R208	1-247-863-00	CARBON	22K	5%	1/6W	
R209	1-247-863-00	CARBON	22K	5%	1/6W	
R210	1-247-863-00	CARBON	22K	5%	1/6W	
R211	1-247-863-00	CARBON	22K	5%	1/6W	
R212	1-247-863-00	CARBON	22K	5%	1/6W	
R214	1-247-879-00	CARBON	100K	5%	1/6W	
		SWITCH				
S101	1-554-485-00	SWITCH, PUSH (14 KEY)				

When indicating parts by reference number, please include the board name.

Ref.No	Part No	Description	Remark
	●:1-610-029-00	TS-24 BOARD ***********	
		SWITCH	
S301	1-553-766-00	SWITCH, KEY BOARD	
S302	1-553-766-00	SWITCH, KEY BOARD	
S303	1-553-766-00	SWITCH, KEY BOARD	
S304	1-553-766-00	SWITCH, KEY BOARD	
S305	1-553-766-00	SWITCH, KEY BOARD	
S306	1-553-766-00	SWITCH, KEY BOARD	
S307	1-553-766-00	SWITCH, KEY BOARD	
S308	1-554-375-00	SWITCH, PUSH (TIMER REC)	

* * *

Ref.No	Part No	Description	Remark
	●:1-609-227-00	CS-3 BOARD **********	
		CONNECTOR	
CN301	●:1-564-029-00	PIN, CONNECTOR 4P	
		SWITCH	
S301	1-554-241-00	SWITCH, LEVER (CASSETTE OFF)	

* * *

Ref.No	Part No	Description	Remark
	●:1-609-228-00	CS-4 BOARD **********	
		SWITCH	
S302	1-554-241-00	SWITCH, LEVER (CASSETTE IN)	

* * *

Ref.No	Part No	Description	Remark
	●:1-605-071-00	LM-8 BOARD **********	
		CAPACITOR	
C101	1-161-057-00	CERAMIC 0.033MF 10% 50V	
C102	1-161-057-00	CERAMIC 0.033MF 10% 50V	
		COIL	
L101	1-408-120-00	MICRO INDUCTOR 18UH	
L102	1-408-120-00	MICRO INDUCTOR 18UH	
		RESISTOR	
R101	⚠1-206-479-00	METAL OXIDE 47 5% 2W	F

* * *

Ref.No	Part No	Description	Remark
	●:1-609-231-00	RD-5 BOARD **********	
		DIODE	
D001	8-719-921-03	DIODE GP-2S02B	
		RESISTOR	
R001	1-247-887-00	CARBON 220K 5% 1/6W	
R002	1-247-831-00	CARBON 1K 5% 1/6W	

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Ref.No.	Part No.	Description	Remark
	●:A-6717-320-A	SS-13 (B-299) BOARD, COMPLETE ******************************	
	●:1-594-130-00	SS-13 (B-368) COMBINED BOARD	
	1-131-413-00	ELECT(SOLID) 1MF 10% 16V	
	1-246-867-00	CARBON 91K 5% 1/8W	
	●:3-655-214-00	CLIP, CABLE	
	●:3-679-172-00	HEAT SINK, SS	
		APACITOR	
C001	1-130-483-00	MYLAR 0.01MF 5% 50V	
C002	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C003	1-123-382-00	ELECT 3.3MF 20% 50V	
C004	1-123-382-00	ELECT 3.3MF 20% 50V	
C005	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C006	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C007	1-123-382-00	ELECT 3.3MF 20% 50V	
C008	1-130-483-00	MYLAR 0.01MF 5% 50V	
C009	1-130-483-00	MYLAR 0.01MF 5% 50V	
C010	1-123-330-00	ELECT 22MF 20% 16V	
C011	1-127-469-00	ELECT(SOLID) 0.33MF 5% 16V	
C012	1-130-491-51	MYLAR 0.047MF 5% 50V	
C013	1-123-332-00	ELECT 47MF 20% 16V	
C014	1-161-013-00	CERAMIC 0.01MF 10% 25V	
C015	1-123-356-00	ELECT 10MF 20% 16V	
C016	1-123-381-00	ELECT 2.2MF 20% 50V	
C018	1-102-106-00	CERAMIC 100PF 10% 50V	
C019	1-130-479-00	MYLAR 0.0047MF 5% 50V	
C020	1-123-332-00	ELECT 47MF 20% 16V	
C021	1-123-381-00	ELECT 2.2MF 20% 50V	
C022	1-123-381-00	ELECT 2.2MF 20% 50V	
C023	1-123-369-00	ELECT(SOLID) 4.7MF 10% 16V	
C024	1-123-369-00	ELECT(SOLID) 4.7MF 10% 16V	
C025	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C026	1-123-332-00	ELECT 47MF 20% 16V	
C027	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C028	1-123-310-00	ELECT 470MF 20% 10V	
C029	1-161-004-00	CERAMIC 0.0018MF 10% 25V	
C030	1-108-582-00	MYLAR 0.013MF 5% 50V	
C031	1-131-398-00	ELECT(SOLID) 0.22MF 10% 16V	
C032	1-161-016-00	CERAMIC 0.018MF 10% 25V	
C033	1-161-013-00	CERAMIC 0.01MF 10% 25V	
C034	1-161-016-00	CERAMIC 0.018MF 10% 25V	
C035	1-161-016-00	CERAMIC 0.018MF 10% 25V	
C036	1-161-016-00	CERAMIC 0.018MF 10% 25V	
C037	1-123-356-00	ELECT 10MF 20% 16V	
C038	1-161-013-00	CERAMIC 0.01MF 10% 25V	
C039	1-123-356-00	ELECT 10MF 20% 16V	
C040	1-124-429-00	ELECT(NON-POLAR) 0.68MF 10% 20V	
C041	1-161-021-00	CERAMIC 0.047MF 10% 25V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SS-13

Ref.No.	Part No.	Description			Remark
C043	1-161-021-00	CERAMIC	0.047MF	10%	25V
C044	1-123-332-00	ELECT	47MF	20%	16V
C045	1-102-961-00	CERAMIC	27PF	5%	50V
C046	1-102-961-00	CERAMIC	27PF	5%	50V
C047	1-161-021-00	CERAMIC	0.047MF	10%	25V
C048	1-101-886-00	CERAMIC	62PF	5%	50V
C049	1-123-332-00	ELECT	47MF	20%	16V
C050	1-127-437-00	ELECT(SOLID)	0.47MF	10%	16V
C201	1-161-019-00	CERAMIC	0.033MF	10%	25V
C202	1-123-330-00	ELECT	22MF	20%	16V
C203	1-161-019-00	CERAMIC	0.033MF	10%	25V
C204	1-161-013-00	CERAMIC	0.01MF	10%	25V
C205	1-123-381-00	ELECT	2.2MF	20%	50V
C206	1-161-019-00	CERAMIC	0.033MF	10%	25V
C207	1-161-021-00	CERAMIC	0.047MF	10%	25V
C301	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C302	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C303	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C304	1-123-356-00	ELECT	10MF	20%	16V
C305	1-161-019-00	CERAMIC	0.033MF	10%	25V
C401	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C402	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C403	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C404	1-123-380-00	ELECT	1MF	20%	50V
C405	1-123-330-00	ELECT	22MF	20%	16V
C406	1-161-019-00	CERAMIC	0.033MF	10%	25V
C407	1-161-019-00	CERAMIC	0.033MF	10%	25V
C408	1-123-330-00	ELECT	22MF	20%	16V
C409	1-161-019-00	CERAMIC	0.033MF	10%	25V
C410	1-123-356-00	ELECT	10MF	20%	25V
C411	1-161-019-00	CERAMIC	0.033MF	10%	25V
C412	1-123-380-00	ELECT	1MF	20%	50V(FORMER)
C501	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C502	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C503	1-161-013-00	CERAMIC	0.01MF	10%	25V
C504	1-129-794-00	FILM	0.0033MF	5%	100V
C505	1-161-013-00	CERAMIC	0.01MF	10%	25V
C506	1-161-013-00	CERAMIC	0.01MF	10%	25V
C507	1-123-380-00	ELECT	1MF	20%	50V
C508	1-161-017-00	CERAMIC	0.022MF	10%	25V
C509	1-123-380-00	ELECT	1MF	20%	50V
C510	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C511	1-123-379-00	ELECT	0.47MF	20%	50V
C601	1-123-380-00	ELECT	1MF	20%	50V
C602	1-123-356-00	ELECT	10MF	20%	16V
C603	1-123-380-00	ELECT	1MF	20%	50V
C751	1-123-333-00	ELECT	100MF	20%	16V
C752	1-123-332-00	ELECT	47MF	20%	16V
C754	1-161-021-00	CERAMIC	0.047MF	10%	25V
		FILTER			
CF401	1-527-532-00	OSCILLATOR, CERAMIC (400KHz)			

Ref.No.	Part No.	Description	Remark
		CONNECTOR	
CN001	♠:1-560-892-41	PIN, CONNECTOR 4P	
CN002	♠:1-560-891-21	PIN, CONNECTOR 3P	
CN003	♠:1-560-891-41	PIN, CONNECTOR 3P	
CN004	♠:1-560-892-21	PIN, CONNECTOR 4P	
CN005	♠:1-560-466-00	PIN, CONNECTOR 3P	
CN006	♠:1-560-891-31	PIN, CONNECTOR 3P	
CN007	♠:1-560-890-00	PIN, CONNECTOR 2P	
CN008	♠:1-560-892-00	PIN, CONNECTOR 4P	
CN009	♠:1-560-900-00	PIN, CONNECTOR 12P	
CN010	♠:1-560-891-00	PIN, CONNECTOR 3P	
CN401	♠:1-560-891-00	PIN, CONNECTOR 3P	
CN402	♠:1-560-898-21	PIN, CONNECTOR 10P	
CN403	♠:1-560-890-31	PIN, CONNECTOR 2P	
CN404	♠:1-560-890-21	PIN, CONNECTOR 2P	
CN405	♠:1-560-900-00	PIN, CONNECTOR 12P	
CN406	♠:1-560-890-00	PIN, CONNECTOR 2P	
CN407	♠:1-560-891-21	PIN, CONNECTOR 3P	
CN408	♠:1-560-890-31	PIN, CONNECTOR 2P	
CN409	♠:1-560-898-00	PIN, CONNECTOR 10P	
CN410	♠:1-560-896-00	PIN, CONNECTOR 8P	
CN411	♠:1-560-893-00	PIN, CONNECTOR 5P	
CN412	♠:1-560-892-21	PIN, CONNECTOR 4P	
CN413	♠:1-560-890-21	PIN, CONNECTOR 2P	
CN414	♠:1-560-892-31	PIN, CONNECTOR 4P	
CN415	♠:1-560-891-00	PIN, CONNECTOR 3P	
CN416	♠:1-560-890-41	PIN, CONNECTOR 2P	
CN417	♠:1-560-892-00	PIN, CONNECTOR 4P	
		DIODE	
D001	8-719-101-76	DIODE RD10EL2	
D002	8-719-911-19	DIODE 1SS119	
D003	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
D005	8-719-911-19	DIODE 1SS119	
D006	8-719-100-43	DIODE RD7.5EB1	
D008	8-719-911-19	DIODE 1SS119	
D009	8-719-911-19	DIODE 1SS119	
D010	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-911-19	DIODE 1SS119	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-911-19	DIODE 1SS119	
D206	8-719-911-19	DIODE 1SS119	
D207	8-719-911-19	DIODE 1SS119	
D208	8-719-911-19	DIODE 1SS119	
D209	8-719-911-19	DIODE 1SS119	
D210	8-719-911-19	DIODE 1SS119	
D211	8-719-911-19	DIODE 1SS119	
D212	8-719-911-19	DIODE 1SS119	
D213	8-719-911-19	DIODE 1SS119	
D214	8-719-911-19	DIODE 1SS119	

Notes:

(Former) : Model with IC401 (μPD553C-261) and IC402 (μPD553C-262)
(New) : Model with IC401 (μPD553C-276) and IC402 (μPD553C-287)

When indicating parts by reference number, please include the board name.

Ref No	Part No	Description	Remark
D215	8-719-911-19	DIODE 1SS119	(FORMER)
D216	8-719-911-19	DIODE 1SS119	
D217	8-719-911-19	DIODE 1SS119	
D301	8-719-101-77	DIODE RD10EL3	
D302	8-719-100-66	DIODE RD12EB3	
D303	8-719-911-19	DIODE 1SS119	
D401	8-719-911-19	DIODE 1SS119	
D402	8-719-911-19	DIODE 1SS119	
D403	8-719-911-19	DIODE 1SS119	
D404	8-719-911-19	DIODE 1SS119	
D405	8-719-911-19	DIODE 1SS119	
D407	8-719-911-19	DIODE 1SS119	
D409	8-719-911-19	DIODE 1SS119	(FORMER)
D410	8-719-911-19	DIODE 1SS119	
D501	8-719-911-19	DIODE 1SS119	
D502	8-719-911-19	DIODE 1SS119	
D503	8-719-911-19	DIODE 1SS119	
D601	8-719-911-19	DIODE 1SS119	
D602	8-719-101-70	DIODE RD8.2EL2	
D603	8-719-911-19	DIODE 1SS119	
D751	8-719-101-50	DIODE RD5.1EL2	
D752	8-719-911-19	DIODE 1SS119	
D753	8-719-911-19	DIODE 1SS119	

IC

Ref No	Part No	Description	Remark
IC001	8-751-941-00	IC CX-194B-0	
IC002	8-759-135-80	IC UPC358C	
IC003	8-759-145-58	IC UPC4558C	
IC004	8-759-240-53	IC TC4053BP	
IC005	8-759-132-40	IC UPC324C	
IC006	8-759-132-40	IC UPC324C	
IC301	8-759-907-28	IC M32080SL	
IC401	8-759-101-38	IC UPD553C-261	(FORMER)
	8-759-101-66	IC UPD553C-276	(NEW)
IC402	8-759-101-39	IC UPD553C-262	(FORMER)
	8-759-101-68	IC UPD553C-287	(NEW)

COIL

Ref No	Part No	Description	Remark
L001	1-408-615-00	MICRO INDUCTOR 100UH	

TRANSISTOR

Ref No	Part No	Description	Remark
Q001	8-729-178-54	TRANSISTOR 2SC2785	
Q002	8-729-178-54	TRANSISTOR 2SC2785	
Q003	8-729-117-54	TRANSISTOR 2SA1175	
Q004	⚠8-729-177-43	TRANSISTOR 2SD774	
Q005	8-729-606-32	TRANSISTOR 2SC2603	
Q006	8-729-178-54	TRANSISTOR 2SC2785	
Q007	8-729-178-54	TRANSISTOR 2SC2785	
Q008	8-729-178-54	TRANSISTOR 2SC2785	
Q009	8-729-178-54	TRANSISTOR 2SC2785	
Q201	8-729-117-54	TRANSISTOR 2SA1175	
Q202	8-729-178-54	TRANSISTOR 2SC2785	
Q203	8-729-316-16	TRANSISTOR 2SC1061	
Q204	8-729-178-54	TRANSISTOR 2SC2785	
Q205	8-729-178-54	TRANSISTOR 2SC2785	

Ref.No.	Part No.	Description	Remark
Q206	8-729-178-54	TRANSISTOR 2SC2785	
Q207	8-729-117-54	TRANSISTOR 2SA1175	
Q208	⚠8-729-177-43	TRANSISTOR 2SD774	
Q209	8-729-117-54	TRANSISTOR 2SA1175	
Q210	8-729-177-43	TRANSISTOR 2SD774	
Q211	8-729-177-32	TRANSISTOR 2SD773	
Q212	8-729-116-42	TRANSISTOR 2SD1164	
Q213	⚠8-729-177-32	TRANSISTOR 2SD773	
Q214	8-729-116-42	TRANSISTOR 2SD1164	
Q215	⚠8-729-178-54	TRANSISTOR 2SC2785	
Q216	8-729-178-54	TRANSISTOR 2SC2785	
Q217	8-729-178-54	TRANSISTOR 2SC2785	
Q218	8-729-178-54	TRANSISTOR 2SC2785	
Q221	8-729-177-32	TRANSISTOR 2SD773	
Q222	8-729-178-54	TRANSISTOR 2SC2785	
Q223	8-729-374-02	TRANSISTOR 2SB740	
Q224	8-729-177-43	TRANSISTOR 2SD774	
Q225	8-729-374-02	TRANSISTOR 2SB740	
Q226	⚠8-729-177-43	TRANSISTOR 2SD774	
Q227	8-729-178-54	TRANSISTOR 2SC2785	
Q301	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-178-54	TRANSISTOR 2SC2785	
Q303	8-729-178-54	TRANSISTOR 2SC2785	
Q305	8-729-178-54	TRANSISTOR 2SC2785	
Q306	8-729-178-54	TRANSISTOR 2SC2785	
Q307	8-729-117-54	TRANSISTOR 2SA1175	
Q308	8-729-117-54	TRANSISTOR 2SA1175	
Q309	⚠8-729-177-43	TRANSISTOR 2SD774	
Q401	8-729-178-54	TRANSISTOR 2SC2785	
Q402	⚠8-729-178-54	TRANSISTOR 2SC2785	
Q403	8-729-178-54	TRANSISTOR 2SC2785	
Q404	8-729-178-54	TRANSISTOR 2SC2785	
Q405	8-729-178-54	TRANSISTOR 2SC2785	
Q406	8-729-117-54	TRANSISTOR 2SA1175	
Q407	8-729-178-54	TRANSISTOR 2SC2785	
Q408	⚠8-729-374-02	TRANSISTOR 2SB740	
Q409	8-729-606-32	TRANSISTOR 2SC2603	
Q410	8-729-178-54	TRANSISTOR 2SC2785	
Q411	8-729-178-54	TRANSISTOR 2SC2785	
Q412	8-729-178-54	TRANSISTOR 2SC2785	
Q413	8-729-178-54	TRANSISTOR 2SC2785	
Q414	8-729-178-54	TRANSISTOR 2SC2785	
Q501	8-729-178-54	TRANSISTOR 2SC2785	
Q502	8-729-178-54	TRANSISTOR 2SC2785	
Q503	8-729-178-54	TRANSISTOR 2SC2785	
Q504	8-729-178-54	TRANSISTOR 2SC2785	
Q505	8-729-178-54	TRANSISTOR 2SC2785	
Q601	8-729-178-54	TRANSISTOR 2SC2785	
Q602	8-729-178-54	TRANSISTOR 2SC2785	
Q603	8-729-178-54	TRANSISTOR 2SC2785	
Q751	8-729-117-54	TRANSISTOR 2SA1175	
Q752	8-729-178-54	TRANSISTOR 2SC2785	

Notes:

(Former) : Model with IC401 (μPD553C-261) and IC402 (μPD553C-262)
(New) : Model with IC401 (μPD553C-276) and IC402 (μPD553C-287)

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SS-13

Ref.No	Part No	Description				Remark
Q754	8-729-606-32	TRANSISTOR 2SC2603				
Q755	8-729-178-54	TRANSISTOR 2SC2785				
Q756	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R001	1-247-831-00	CARBON	1K	5%	1/6W	
R002	1-247-871-00	CARBON	47K	5%	1/6W	
R003	1-247-859-00	CARBON	15K	5%	1/6W	
R004	1-247-851-00	CARBON	6.8K	5%	1/6W	
R005	1-247-863-00	CARBON	22K	5%	1/6W	
R006	1-247-863-00	CARBON	22K	5%	1/6W	
R007	1-247-847-00	CARBON	4.7K	5%	1/6W	
R008	1-247-871-00	CARBON	47K	5%	1/6W	
R009	1-247-863-00	CARBON	22K	5%	1/6W	
R010	1-247-863-00	CARBON	22K	5%	1/6W	
R011	1-247-829-00	CARBON	820	5%	1/6W	
R012	⚠.1-244-844-00	CARBON	62	5%	1/2W	
R013	1-247-821-00	CARBON	390	5%	1/6W	
R014	⚠.1-246-423-00	CARBON	8.2	5%	1/4W	
R015	1-247-855-00	CARBON	10K	5%	1/6W	
R016	1-247-855-00	CARBON	10K	5%	1/6W	
R017	⚠.1-244-845-51	CARBON	68	5%	1/2W	
R018	1-247-831-00	CARBON	1K	5%	1/6W	
R019	1-247-829-00	CARBON	820	5%	1/6W	
R020	1-247-841-00	CARBON	2.7K	5%	1/6W	
R021	1-247-879-00	CARBON	100K	5%	1/6W	
R022	1-247-844-00	CARBON	3.6K	5%	1/6W	
R023	1-247-831-00	CARBON	1K	5%	1/6W	
R024	1-247-855-00	CARBON	10K	5%	1/6W	
R027	1-247-879-00	CARBON	100K	5%	1/6W	
R028	1-247-844-00	CARBON	3.6K	5%	1/6W	
R029	1-247-885-00	CARBON	180K	5%	1/6W	
R031	1-247-844-00	CARBON	3.6K	5%	1/6W	
R032	1-247-859-00	CARBON	15K	5%	1/6W	
R034	1-247-863-00	CARBON	22K	5%	1/6W	
R035	1-247-831-00	CARBON	1K	5%	1/6W	
R036	1-247-903-00	CARBON	1M	5%	1/6W	
R037	1-247-835-00	CARBON	1.5K	5%	1/6W	
R038	1-247-855-00	CARBON	10K	5%	1/6W	
R039	1-247-867-00	CARBON	33K	5%	1/6W	
R040	1-247-903-00	CARBON	1M	5%	1/6W	
R042	1-247-831-00	CARBON	1K	5%	1/6W	
R043	1-247-855-00	CARBON	10K	5%	1/6W	
R044	1-247-879-00	CARBON	100K	5%	1/6W	
R045	1-247-871-00	CARBON	47K	5%	1/6W	
R046	1-247-903-00	CARBON	1M	5%	1/6W	
R047	1-247-831-00	CARBON	1K	5%	1/6W	
R048	1-247-855-00	CARBON	10K	5%	1/6W	
R049	1-247-879-00	CARBON	100K	5%	1/6W	
R050	1-247-879-00	CARBON	100K	5%	1/6W	
R051	1-247-875-00	CARBON	68K	5%	1/6W	
R052	1-247-875-00	CARBON	68K	5%	1/6W	
R053	1-247-879-00	CARBON	100K	5%	1/6W	

Ref.No.	Part No.	Description				Remark
R054	1-247-875-00	CARBON	68K	5%	1/6W	
R055	1-247-858-00	CARBON	13K	5%	1/6W	
R056	1-247-853-00	CARBON	8.2K	5%	1/6W	
R056	1-247-853-00	CARBON	8.2K	5%	1/6W	
R057	1-214-160-00	METAL	15K	1%	1/4W	
R058	1-247-862-00	CARBON	20K	5%	1/6W	
R059	1-247-841-00	CARBON	2.7K	5%	1/6W	
R060	1-247-844-00	CARBON	3.6K	5%	1/6W	
R061	1-247-847-00	CARBON	4.7K	5%	1/6W	
R062	1-247-883-00	CARBON	150K	5%	1/6W	
R063	1-247-883-00	CARBON	150K	5%	1/6W	
R064	1-247-848-00	CARBON	5.1K	5%	1/6W	
R065	1-247-847-00	CARBON	4.7K	5%	1/6W	
R066	1-247-903-00	CARBON	1M	5%	1/6W	
R067	1-247-867-00	CARBON	33K	5%	1/6W	
R068	1-247-876-00	CARBON	75K	5%	1/6W	
R069	1-247-883-00	CARBON	150K	5%	1/6W	
R070	1-247-867-00	CARBON	33K	5%	1/6W	
R071	1-247-879-00	CARBON	100K	5%	1/6W	
R072	1-247-879-00	CARBON	100K	5%	1/6W	
R073	1-247-871-00	CARBON	47K	5%	1/6W	
R074	1-247-871-00	CARBON	47K	5%	1/6W	
R075	1-247-857-00	CARBON	12K	5%	1/6W	
R076	1-247-859-00	CARBON	15K	5%	1/6W	
R077	1-247-887-00	CARBON	220K	5%	1/6W	
R078	1-247-887-00	CARBON	220K	5%	1/6W	
R079	1-247-865-00	CARBON	27K	5%	1/6W	
R080	1-247-848-00	CARBON	5.1K	5%	1/6W	
R081	1-247-867-00	CARBON	33K	5%	1/6W	
R082	1-247-900-00	CARBON	750K	5%	1/6W	
R083	1-247-873-00	CARBON	56K	5%	1/6W	
R084	1-247-856-00	CARBON	11K	5%	1/6W	
R085	1-247-853-00	CARBON	8.2K	5%	1/6W	
R086	1-247-867-00	CARBON	33K	5%	1/6W	
R087	1-247-867-00	CARBON	33K	5%	1/6W	
R088	1-247-855-00	CARBON	10K	5%	1/6W	
R089	1-247-865-00	CARBON	27K	5%	1/6W	
R090	1-247-856-00	CARBON	11K	5%	1/6W	
R091	1-247-837-00	CARBON	1.8K	5%	1/6W	
R092	1-247-839-00	CARBON	2.2K	5%	1/6W	
R093	1-247-839-00	CARBON	2.2K	5%	1/6W	
R095	1-247-864-00	CARBON	24K	5%	1/6W	
R097	1-247-893-00	CARBON	390K	5%	1/6W	
R098	1-247-849-00	CARBON	5.6K	5%	1/6W	
R099	1-247-879-00	CARBON	100K	5%	1/6W	
R100	1-247-879-00	CARBON	100K	5%	1/6W	
R202	1-247-847-00	CARBON	4.7K	5%	1/6W	
R203	⚠.1-212-360-00	METAL OXIDE	1	5%	1W	F
R204	⚠.1-246-981-00	CARBON	4.7	5%	1/8W	F
R205	1-247-871-00	CARBON	47K	5%	1/6W	
R206	1-247-855-00	CARBON	10K	5%	1/6W	
R207	1-247-871-00	CARBON	47K	5%	1/6W	
R208	1-247-867-00	CARBON	33K	5%	1/6W	
R209	1-214-132-00	METAL	1K	1%	1/4W	
R210	1-247-838-00	CARBON	2K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
R211	1-247-847-00	CARBON	4.7K	5%	1/6W	
R212	⚠.1-212-360-00	METAL OXIDE	1	5%	1W	F
R213	⚠.1-246-981-00	CARBON	4.7	5%	1/8W	F
R214	1-247-855-00	CARBON	10K	5%	1/6W	
R215	1-247-855-00	CARBON	10K	5%	1/6W	
R216	1-247-855-00	CARBON	10K	5%	1/6W	
R217	1-247-855-00	CARBON	10K	5%	1/6W	
R218	1-247-855-00	CARBON	10K	5%	1/6W	
R219	1-247-855-00	CARBON	10K	5%	1/6W	
R220	⚠.1-246-981-00	CARBON	4.7	5%	1/8W	F
R221	1-247-863-00	CARBON	22K	5%	1/6W	
R222	1-247-843-00	CARBON	3.3K	5%	1/6W	
R223	1-247-849-00	CARBON	5.6K	5%	1/6W	
R224	1-247-855-00	CARBON	10K	5%	1/6W	
R225	1-247-855-00	CARBON	10K	5%	1/6W	
R226	1-247-863-00	CARBON	22K	5%	1/6W	
R227	1-247-863-00	CARBON	22K	5%	1/6W	
R228	1-247-863-00	CARBON	22K	5%	1/6W	
R230	1-247-849-00	CARBON	5.6K	5%	1/6W	
R231	1-247-863-00	CARBON	22K	5%	1/6W	
R233	⚠.1-212-366-00	METAL OXIDE	3.3	5%	1W	F
R234	1-247-863-00	CARBON	22K	5%	1/6W	
R235	1-247-863-00	CARBON	22K	5%	1/6W	
R236	1-247-831-00	CARBON	1K	5%	1/6W	
R237	1-247-849-00	CARBON	5.6K	5%	1/6W	
R238	1-247-831-00	CARBON	1K	5%	1/6W	
R239	⚠.1-212-360-00	METAL OXIDE	1	5%	1W	F
R240	1-247-849-00	CARBON	5.6K	5%	1/6W	
R241	1-247-831-00	CARBON	1K	5%	1/6W	
R242	1-247-831-00	CARBON	1K	5%	1/6W	
R243	1-247-863-00	CARBON	22K	5%	1/6W	
R244	1-247-863-00	CARBON	22K	5%	1/6W	
R245	1-247-801-00	CARBON	56	5%	1/6W	
R247	1-247-871-00	CARBON	47K	5%	1/6W	
R249	1-247-858-00	CARBON	13K	5%	1/6W	
R250	1-247-855-00	CARBON	10K	5%	1/6W	(FORMER)
R301	1-247-839-00	CARBON	2.2K	5%	1/6W	
R302	1-247-855-00	CARBON	10K	5%	1/6W	
R303	1-247-837-00	CARBON	1.8K	5%	1/6W	
R304	1-247-879-00	CARBON	100K	5%	1/6W	
R305	1-247-879-00	CARBON	100K	5%	1/6W	
R306	1-247-879-00	CARBON	100K	5%	1/6W	
R307	1-247-839-00	CARBON	2.2K	5%	1/6W	
R308	1-247-855-00	CARBON	10K	5%	1/6W	
R311	1-247-837-00	CARBON	1.8K	5%	1/6W	
R312	1-247-839-00	CARBON	2.2K	5%	1/6W	
R313	1-247-871-00	CARBON	47K	5%	1/6W	
R314	1-247-871-00	CARBON	47K	5%	1/6W	
R315	1-247-871-00	CARBON	47K	5%	1/6W	
R316	1-247-871-00	CARBON	47K	5%	1/6W	
R317	1-247-855-00	CARBON	10K	5%	1/6W	
R318	1-247-831-00	CARBON	1K	5%	1/6W	
R319	1-247-895-00	CARBON	470K	5%	1/6W	
R320	1-247-895-00	CARBON	470K	5%	1/6W	
R321	1-247-879-00	CARBON	100K	5%	1/6W	
R322	1-247-837-00	CARBON	1.8K	5%	1/6W	
R323	1-247-879-00	CARBON	100K	5%	1/6W	
R324	1-247-879-00	CARBON	100K	5%	1/6W	
R325	1-247-879-00	CARBON	100K	5%	1/6W	
R326	1-247-879-00	CARBON	100K	5%	1/6W	
R327	1-247-879-00	CARBON	100K	5%	1/6W	
R328	1-247-855-00	CARBON	10K	5%	1/6W	
R329	1-247-879-00	CARBON	100K	5%	1/6W	
R330	1-247-879-00	CARBON	100K	5%	1/6W	
R331	1-247-879-00	CARBON	100K	5%	1/6W	
R401	1-247-831-00	CARBON	1K	5%	1/6W	
R402	1-247-863-00	CARBON	22K	5%	1/6W	
R403	1-247-831-00	CARBON	1K	5%	1/6W	
R404	1-247-831-00	CARBON	1K	5%	1/6W	
R406	1-247-879-00	CARBON	100K	5%	1/6W	
R407	1-247-871-00	CARBON	47K	5%	1/6W	
R408	1-247-878-00	CARBON	91K	5%	1/6W	(FORMER)
R409	1-247-879-00	CARBON	100K	5%	1/6W	
R410	1-247-855-00	CARBON	10K	5%	1/6W	
R411	1-247-879-00	CARBON	100K	5%	1/6W	
R412	1-247-831-00	CARBON	1K	5%	1/6W	
R413	1-247-879-00	CARBON	100K	5%	1/6W	
R414	1-247-879-00	CARBON	100K	5%	1/6W	
R415	1-247-879-00	CARBON	100K	5%	1/6W	
R416	1-247-879-00	CARBON	100K	5%	1/6W	
R417	1-247-879-00	CARBON	100K	5%	1/6W	
R418	1-247-879-00	CARBON	100K	5%	1/6W	
R419	1-247-879-00	CARBON	100K	5%	1/6W	
R420	1-247-879-00	CARBON	100K	5%	1/6W	
R421	1-247-863-00	CARBON	22K	5%	1/6W	
R422	1-247-831-00	CARBON	1K	5%	1/6W	
R423	1-247-879-00	CARBON	100K	5%	1/6W	
R424	1-247-843-00	CARBON	3.3K	5%	1/6W	
R425	1-247-839-00	CARBON	2.2K	5%	1/6W	
R426	1-247-855-00	CARBON	10K	5%	1/6W	
R427	1-247-873-00	CARBON	56K	5%	1/6W	
R428	1-247-865-00	CARBON	27K	5%	1/6W	
R429	1-247-873-00	CARBON	56K	5%	1/6W	
R430	1-247-865-00	CARBON	27K	5%	1/6W	
R431	1-247-855-00	CARBON	10K	5%	1/6W	
R432	1-247-863-00	CARBON	22K	5%	1/6W	
R433	1-247-855-00	CARBON	10K	5%	1/6W	
R434	1-247-849-00	CARBON	5.6K	5%	1/6W	
R435	1-247-879-00	CARBON	100K	5%	1/6W	
R436	1-247-879-00	CARBON	100K	5%	1/6W	
R437	1-246-468-00	CARBON	620	5%	1/4W	
R438	1-247-879-00	CARBON	100K	5%	1/6W	
R439	1-247-873-00	CARBON	56K	5%	1/6W	
R440	1-247-865-00	CARBON	27K	5%	1/6W	

Notes:

(Former) : Model with IC401 (μPD553C-261) and IC402 (μPD553C-262)
(New) : Model with IC401 (μPD553C-276) and IC402 (μPD553C-287)

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SS-13 GM-2
(FORMER)

Ref No	Part No	Description				Remark
R441	1-247-863-00	CARBON	22K	5%	1/6W	
R442	1-247-809-00	CARBON	120	5%	1/6W	
R443	1-247-829-00	CARBON	820	5%	1/6W	
R444	1-247-843-00	CARBON	3.3K	5%	1/6W	
R445	1-247-849-00	CARBON	5.6K	5%	1/6W	
R446	1-247-873-00	CARBON	56K	5%	1/6W	
R447	1-247-807-00	CARBON	100	5%	1/6W	
R448	1-246-468-00	CARBON	620	5%	1/4W	
R449	1-246-468-00	CARBON	620	5%	1/4W	
R450	1-246-470-00	CARBON	750	5%	1/4W	
R451	1-246-468-00	CARBON	620	5%	1/4W	
R452	1-247-879-00	CARBON	100K	5%	1/6W	
R453	1-247-843-00	CARBON	3.3K	5%	1/6W	
R454	1-247-871-00	CARBON	47K	5%	1/6W	
R455	1-247-801-00	CARBON	56	5%	1/6W	
R456	1-247-879-00	CARBON	100K	5%	1/6W	
R457	1-247-879-00	CARBON	100K	5%	1/6W	
R458	1-247-835-00	CARBON	1.5K	5%	1/6W	
R459	1-247-823-00	CARBON	470	5%	1/6W	
R460	1-247-855-00	CARBON	10K	5%	1/6W	
R461	1-247-839-00	CARBON	2.2K	5%	1/6W	(FORMER)
	1-247-879-00	CARBON	100K	5%	1/6W	(NEW)
R462	1-247-849-00	CARBON	5.6K	5%	1/6W	
R463	1-247-855-00	CARBON	10K	5%	1/6W	
R465	1-247-855-00	CARBON	10K	5%	1/6W	
R501	1-247-895-00	CARBON	470K	5%	1/6W	
R502	1-247-875-00	CARBON	68K	5%	1/6W	
R503	1-247-849-00	CARBON	5.6K	5%	1/6W	
R504	1-247-831-00	CARBON	1K	5%	1/6W	
R505	1-247-855-00	CARBON	10K	5%	1/6W	
R506	1-247-879-00	CARBON	100K	5%	1/6W	
R507	1-247-886-00	CARBON	200K	5%	1/6W	
R508	1-247-841-00	CARBON	2.7K	5%	1/6W	
R509	1-247-815-00	CARBON	220	5%	1/6W	
R510	1-247-869-00	CARBON	39K	5%	1/6W	
R511	1-247-875-00	CARBON	68K	5%	1/6W	
R512	1-247-879-00	CARBON	100K	5%	1/6W	
R513	1-247-852-00	CARBON	7.5K	5%	1/6W	
R514	1-247-841-00	CARBON	2.7K	5%	1/6W	
R515	1-247-849-00	CARBON	5.6K	5%	1/6W	
R516	1-247-831-00	CARBON	1K	5%	1/6W	
R517	1-247-867-00	CARBON	33K	5%	1/6W	
R518	1-247-863-00	CARBON	22K	5%	1/6W	
R519	1-247-801-00	CARBON	56	5%	1/6W	
R520	1-247-879-00	CARBON	100K	5%	1/6W	
R601	1-247-903-00	CARBON	1M	5%	1/6W	
R602	1-247-879-00	CARBON	100K	5%	1/6W	
R603	1-247-863-00	CARBON	22K	5%	1/6W	
R604	1-247-855-00	CARBON	10K	5%	1/6W	
R605	1-247-895-00	CARBON	470K	5%	1/6W	
R606	1-247-869-00	CARBON	39K	5%	1/6W	
R607	1-247-807-00	CARBON	100	5%	1/6W	
R608	1-247-879-00	CARBON	100K	5%	1/6W	

Ref.No.	Part No.	Description				Remark
R609	1-247-839-00	CARBON	2.2K	5%	1/6W	
R610	1-247-831-00	CARBON	1K	5%	1/6W	
R751	1-247-831-00	CARBON	1K	5%	1/6W	
R752	1-247-863-00	CARBON	22K	5%	1/6W	
R753	1-247-871-00	CARBON	47K	5%	1/6W	
R754	1-247-863-00	CARBON	22K	5%	1/6W	
R755	1-247-863-00	CARBON	22K	5%	1/6W	
R758	1-247-845-00	CARBON	3.9K	5%	1/6W	
R759	1-247-855-00	CARBON	10K	5%	1/6W	
R760	1-247-831-00	CARBON	1K	5%	1/6W	
R766	1-247-871-00	CARBON	47K	5%	1/6W	

VARIABLE RESISTOR

RV001	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV002	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV003	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV004	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV005	1-228-750-00	RES, ADJ, CARBON 47K
RV006	1-228-750-00	RES, ADJ, CARBON 47K
RV008	1-228-750-00	RES, ADJ, CARBON 47K
RV009	1-228-747-00	RES, ADJ, CARBON 4.7K

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♠:1-609-890-13 GM-2 BOARD ....FORMER

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CAPACITOR

C701	1-123-328-00	ELECT	4.7MF	20%	25V
C702	1-123-381-00	ELECT	2.2MF	20%	50V
C703	1-123-381-00	ELECT	2.2MF	20%	50V
C753	1-131-381-00	ELECT(SOLID)	47MF	10%	10V

DIODE

D408	8-719-911-19	DIODE 1SS119
D701	8-719-911-19	DIODE 1SS119
D702	8-719-911-19	DIODE 1SS119
D703	8-719-911-19	DIODE 1SS119
D704	8-719-911-19	DIODE 1SS119
D705	8-719-911-19	DIODE 1SS119

TRANSISTOR

Q701	8-729-178-54	TRANSISTOR 2SC2785
Q702	8-729-178-54	TRANSISTOR 2SC2785
Q703	8-729-178-54	TRANSISTOR 2SC2785
Q704	8-729-178-54	TRANSISTOR 2SC2785
Q753	8-729-178-54	TRANSISTOR 2SC2785
Q758	8-729-178-54	TRANSISTOR 2SC2785
Q759	8-729-178-54	TRANSISTOR 2SC2785

RESISTOR

R701	1-247-873-00	CARBON	56K	5%	1/6W
R702	1-247-873-00	CARBON	56K	5%	1/6W

Notes:

(Former) : *Model with IC401 (μPD553C-261) and IC402 (μPD553C-262)*

(New) : *Model with IC401 (μPD553C-276) and IC402 (μPD553C-287)*

When indicating parts by reference number, please include the board name.

GM-2 (FORMER) FS-19 FS-20 FS-21 JK-1 PS-19

Ref.No.	Part No.	Description	Remark
R703	1-247-873-00	CARBON 56K 5% 1/6W	
R704	1-247-873-00	CARBON 56K 5% 1/6W	
R705	1-247-895-00	CARBON 470K 5% 1/6W	
R706	1-247-895-00	CARBON 470K 5% 1/6W	
R707	1-247-877-00	CARBON 82K 5% 1/6W	
R710	1-247-887-00	CARBON 220K 5% 1/6W	
R711	1-247-871-00	CARBON 47K 5% 1/6W	
R712	1-247-862-00	CARBON 20K 5% 1/6W	
R713	1-247-879-00	CARBON 100K 5% 1/6W	
R715	1-247-879-00	CARBON 100K 5% 1/6W	
R716	1-247-839-00	CARBON 2.2K 5% 1/6W	
R718	1-247-871-00	CARBON 47K 5% 1/6W	
R719	1-247-871-00	CARBON 47K 5% 1/6W	
R720	1-247-855-00	CARBON 10K 5% 1/6W	
R721	1-247-871-00	CARBON 47K 5% 1/6W	
R756	1-247-867-00	CARBON 33K 5% 1/6W	
R757	1-247-867-00	CARBON 33K 5% 1/6W	
R761	1-247-879-00	CARBON 100K 5% 1/6W	
R762	1-247-863-00	CARBON 22K 5% 1/6W	
R763	1-247-863-00	CARBON 22K 5% 1/6W	
R764	1-247-863-00	CARBON 22K 5% 1/6W	
R765	1-247-863-00	CARBON 22K 5% 1/6W	

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	♦:1-609-219-00	FS-19 BOARD ***********	
		DIODE	
D001	8-719-812-32	DIODE TLY123	
D002	8-719-812-33	DIODE TLG123A	
		SWITCH	
S001	1-553-766-00	SWITCH, KEY BOARD (FF)	
S002	1-553-766-00	SWITCH, KEY BOARD (REW)	
S003	1-553-766-00	SWITCH, KEY BOARD (PLAY)	
S004	1-553-766-00	SWITCH, KEY BOARD (STOP)	
S005	1-553-766-00	SWITCH, KEY BOARD (PAUSE)	

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	♦:1-609-220-00	FS-20 BOARD ***********	
		DIODE	
D101	8-719-812-31	DIODE TLR123	
D102	8-719-812-32	DIODE TLY123	
		SWITCH	
S101	1-554-378-00	SWITCH, SLIDE (RECORD)	
S102	1-553-766-00	SWITCH, KEY BOARD (VTR/TV)	

Ref.No.	Part No.	Description	Remark
	♦:1-609-221-00	FS-21 BOARD ***********	
		DIODE	
D201	8-719-812-33	DIODE TLG123A	
		VARIABLE RESISTOR	
RV201	1-228-918-00	RES, VAR, CARBON 100K	
RV202	1-230-066-00	RES, ADJ, CARBON 4.7K	
		SWITCH	
S201	1-553-766-00	SWITCH, KEY BOARD (POWER ON/OFF)	
S202	1-553-766-00	SWITCH, KEY BOARD (EJECT)	
S203	1-554-377-00	SWITCH, SLIDE (RECORD MODE)	

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	♦:1-609-222-00	JK-1 BOARD **********	
	♦:3-679-319-00	INSULATOR	
		CAPACITOR	
C001	1-161-021-00	CERAMIC 0.047MF 10% 25V	
		JACK	
CNJ001	1-507-841-00	JACK, MINIATURE (AUDIO IN)	
CNJ002	1-507-841-00	JACK, MINIATURE (MIC)	
CNJ003	1-507-588-32	JACK, PIN, 1P (VIDEO IN)	
CNJ004	1-507-840-00	JACK, MINIATURE (CAMERA PAUSE)	
		RESISTOR	
R002	1-247-875-00	CARBON 68K 5% 1/6W	
R003	1-247-815-00	CARBON 220 5% 1/6W	
R004	1-247-804-00	CARBON 75 5% 1/6W	
R005	1-247-799-00	CARBON 47 5% 1/6W	

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	♦:A-6728-711-A	PS-19 BOARD, COMPLETE **********************	
		CAPACITOR	
C001	⚠1-130-680-00	FILM 0.1MF 20% 125V	...US,E2,PX2 MODEL
	⚠1-130-680-21	FILM 0.1MF 20% 300V	...E1,PX1 MODEL
C002	1-161-747-00	CERAMIC 0.0022MF 20% 125V	...US,E2,PX2 MODEL
C003	1-161-747-00	CERAMIC 0.0022MF 20% 125V	...US,E2,PX2 MODEL

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

PS-19 PS-20 PS-21 PS-25 CAPSTAN MOTOR

Ref.No.	Part No.	Description				Remark
C004	1-123-380-00	ELECT	1MF	20%		100V
C005	1-123-297-00	ELECT	330MF	20%		6.3V
C006	1-123-386-00	ELECT	33MF	20%		100V
C007	1-124-316-00	ELECT	470MF	20%		35V
C008	1-123-341-00	ELECT	10MF	20%		35V
C009	1-123-332-00	ELECT	47MF	20%		16V
C010	1-161-013-00	CERAMIC	0.01MF	10%		25V
		CONNECTOR				
CN001	♠:1-564-104-00	PIN, CONNECTOR 3P				
CN002	♠:1-560-892-00	PIN, CONNECTOR 4P				
CN003	♠:1-560-900-00	PIN, CONNECTOR 12P				
CN004	♠:1-560-894-00	PIN, CONNECTOR 6P				
CN006	♠:1-560-894-00	PIN, CONNECTOR 6P				
		DIODE				
D001	8-719-200-02	DIODE 10E2				
D002	8-719-200-02	DIODE 10E2				
D003	⚠.8-719-911-19	DIODE 1SS119				
D004	8-719-911-19	DIODE 1SS119				
D005	8-719-911-19	DIODE 1SS119				
D006	8-719-200-02	DIODE 10E2				
D007	8-719-911-19	DIODE 1SS119				
D008	8-719-911-19	DIODE 1SS119				
D009	8-719-100-30	DIODE RD5.1EB2				
D010	8-719-100-61	DIODE RD11EB2				
		FUSE				
F001	⚠.1-532-591-00	FUSE, GLASS TUBE 2A 125V				
		TRANSISTOR				
Q001	⚠.8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R001	1-202-723-00	SOLID	2.2M	10%	1/2W	
R002	⚠.1-212-857-00	FUSIBLE	10	5%	1/4W	F
R003	⚠.1-212-857-00	FUSIBLE	10	5%	1/4W	F
R004	1-247-831-00	CARBON	1K	5%	1/6W	
R005	1-247-879-00	CARBON	100K	5%	1/6W	
R006	1-247-855-00	CARBON	10K	5%	1/6W	
R007	1-247-855-00	CARBON	10K	5%	1/6W	
R010	1-247-839-00	CARBON	2.2K	5%	1/6W	
R011	1-247-851-00	CARBON	6.8K	5%	1/6W	
		TRANSFORMER				
T001	⚠.1-421-357-31	TRANSFORMER, LINE FILTER				

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	♠:1-609-216-00	PS-20 BOARD ***********
	1-533-162-00	HOLDER, FUSE

Ref.No.	Part No.	Description			Remark
		CAPACITOR			
C101	1-125-298-00	ELECT(BLOCK)	10000MF	20%	25V ...US MODEL
	1-123-314-00	ELECT	4700MF	20%	25V ...E,PX MODEL
C102	1-125-349-00	ELECT	6800MF	20%	25V
C103	1-123-332-00	ELECT	47MF	20%	16V
C104	1-123-333-00	ELECT	100MF	20%	25V
		CONNECTOR			
CN101	♠:1-560-136-00	PLUG, CONNECTOR 4P			
		DIODE			
D101	⚠.8-719-503-40	DIODE S3V40F			
D102	⚠.8-719-503-40	DIODE S3V40F			
D103	⚠.8-719-503-40	DIODE S3V40F			
D104	⚠.8-719-503-40	DIODE S3V40F			
D105	⚠.8-719-503-40	DIODE S3V40F			
D106	⚠.8-719-503-40	DIODE S3V40F			
D107	⚠.8-719-503-40	DIODE S3V40F			
D108	⚠.8-719-503-40	DIODE S3V40F			
		FUSE			
F101	⚠.1-532-557-00	FUSE, GLASS TUBE 3.15A 125V			
F102	⚠.1-532-578-00	FUSE, GLASS TUBE 2A 125V			
		IC			
IC101	⚠.8-749-953-24	IC STK-5324			

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	♠:1-609-217-21	PS-21 BOARD ***********
		SWITCH
S001	1-554-377-00	SWITCH, SLIDE (TIMER SELECT)

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	♠:1-609-445-21	PS-25 BOARD ***********
		TRANSISTOR
Q220	8-729-831-33	TRANSISTOR 2SD313HP

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		CAPSTAN MOTOR BOARD *******************		
		CAPACITOR		
C1	1-123-611-00	ELECT	1.0MF	50V
C2	1-123-611-00	ELECT	1.0MF	50V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

CAPSTAN MOTOR TA-20

DEVICE MAGNET ELEMENT

Ref.No.	Part No.	Description			Remark
DM	8-745-211-00	DM-211			

IC

Ref.No.	Part No.	Description			Remark
IC1	8-759-808-79	IC CX-879			

TRANSISTOR

Ref.No.	Part No.	Description			Remark
Q1	8-729-100-01	TRANSISTOR 2SD992			
Q2	8-729-100-01	TRANSISTOR 2SD992			

RESISTOR

Ref.No.	Part No.	Description			Remark
R1	1-247-832-00	CARBON	1.1K	5%	1/6W
R2	1-247-832-00	CARBON	1.1K	5%	1/6W

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♠:A-6721-186-A TA-20 BOARD, COMPLETE
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Part No.	Description
1-463-445-00	TUNER, ET (BT-892)
♠:3-679-120-00	CASE (UPPER), SHIELD, T
♠:3-679-121-00	CASE (INNER), SHIELD, T
♠:3-679-122-00	CASE (LOWER), SHIELD, T
♠:3-679-174-00	CASE (UPPER), SHIELD, AU-33
♠:3-679-175-00	CASE (INNER), SHIELD, AU-33
♠:3-679-176-00	CASE (LOWER), SHIELD, AU-33
♠:3-679-177-00	CASE (LOWER), SHIELD, AU-44
♠:3-679-239-00	CASE (INNER), SHIELD, AU-44
♠:3-679-333-00	REINFORCEMENT, TUNER
♠:4-812-134-11	RIVET NYLON, 3.5
7-621-259-25	SCREW +P 2.6X4

CAPACITOR

Ref.No.	Part No.	Description			Remark
C001	1-102-074-00	CERAMIC	0.001MF	10%	50V
C002	1-130-487-00	MYLAR	0.022MF	5%	50V
C003	1-123-608-00	ELECT	0.22MF	20%	50V
C004	1-123-608-00	ELECT	0.22MF	20%	50V
C005	1-102-526-00	CERAMIC	75PF	5%	50V
C006	1-123-333-00	ELECT	100MF	20%	16V
C007	1-101-004-00	CERAMIC	0.01MF		50V
C008	1-161-021-00	CERAMIC	0.047MF	10%	25V
C009	1-101-884-00	CERAMIC	56PF	5%	50V
C010	1-101-884-00	CERAMIC	56PF	5%	50V
C011	1-123-356-00	ELECT	10MF	20%	16V
C012	1-130-485-00	MYLAR	0.015MF	5%	50V
C013	1-102-851-00	CERAMIC	15PF	5%	50V
C014	1-102-495-00	CERAMIC	75PF	5%	50V
C015	1-123-380-00	ELECT	1MF	20%	50V
C016	1-123-330-00	ELECT	22MF	20%	16V
C017	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C018	1-123-380-00	ELECT	1MF	20%	50V
C019	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C020	1-123-379-00	ELECT	0.47MF	20%	50V
C021	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C022	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C023	1-123-379-00	ELECT	0.47MF	20%	50V
C024	1-102-816-00	CERAMIC	120PF	5%	50V
C025	1-123-333-00	ELECT	100MF	20%	16V
C026	1-102-514-00	CERAMIC	22PF	5%	50V
C027	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C028	1-123-382-00	ELECT	3.3MF	20%	100V
C029	1-123-330-00	ELECT	22MF	20%	16V
C030	1-123-330-00	ELECT	22MF	20%	16V
C031	1-130-632-00	MYLAR	0.1MF	10%	50V
C032	1-130-620-00	MYLAR	0.01MF	10%	50V
C033	1-123-330-00	ELECT	22MF	20%	16V
C034	1-123-318-00	ELECT	33MF	20%	16V
C035	1-161-036-00	CERAMIC	0.047MF	20%	25V
C036	1-123-330-00	ELECT	22MF	20%	16V
C037	1-123-381-00	ELECT	2.2MF	20%	50V
C038	1-123-380-00	ELECT	1MF	20%	50V
C039	1-130-620-00	MYLAR	0.01MF	10%	50V
C040	1-123-330-00	ELECT	22MF	20%	16V
C502	1-123-332-00	ELECT	47MF	20%	16V
C503	1-130-479-00	MYLAR	0.0047MF	5%	50V
C504	1-130-477-00	MYLAR	0.0033MF	5%	50V
C505	1-102-110-00	CERAMIC	220PF	10%	50V
C506	1-130-472-00	MYLAR	0.0012MF	5%	50V
C507	1-123-381-00	ELECT	2.2MF	20%	50V
C508	1-123-354-00	ELECT	3.3MF	20%	50V
C509	1-136-051-00	FILM	0.0039MF	10%	630V
C510	1-130-475-00	MYLAR	0.0022MF	5%	50V
C511	1-123-356-00	ELECT	10MF	20%	16V
C512	1-130-471-00	MYLAR	0.001MF	5%	50V
C513	1-107-166-00	MICA	62PF	5%	500V
C514	1-123-333-00	ELECT	100MF	20%	16V
C515	1-130-477-00	MYLAR	0.0033MF	5%	50V
C517	1-123-354-00	ELECT	3.3MF	20%	50V
C518	1-123-330-00	ELECT	22MF	20%	16V
C519	1-123-356-00	ELECT	10MF	20%	16V
C520	1-101-059-00	CERAMIC	510PF	5%	50V
C521	1-123-328-00	ELECT	4.7MF	20%	25V
C522	1-130-497-00	MYLAR	0.15MF	5%	50V
C523	1-123-328-00	ELECT	4.7MF	20%	25V
C524	1-123-333-00	ELECT	100MF	20%	16V
C525	1-130-482-00	MYLAR	0.0082MF	5%	50V
C526	1-123-328-00	ELECT	4.7MF	20%	25V
C528	1-130-483-00	MYLAR	0.01MF	5%	50V
C530	1-123-296-00	ELECT	220MF	20%	6.3V
C531	1-123-380-00	ELECT	1MF	20%	50V
C533	1-130-468-00	MYLAR	560PF	5%	50V
C534	1-123-379-00	ELECT	0.47MF	20%	50V
C535	1-123-330-00	ELECT	22MF	20%	16V
C536	1-161-021-00	CERAMIC	0.047MF	10%	25V
C537	1-130-472-00	MYLAR	0.0012MF	5%	50V

FILTER

Ref.No.	Part No.	Description
CF001	1-409-332-00	CERAMIC TRAP (4.5MHZ)
CF002	1-527-260-00	FILTER, CERAMIC (4.5MHZ)
CF003	1-409-332-00	CERAMIC TRAP (4.5MHZ)

CONNECTOR

Ref.No.	Part No.	Description
CN001	♠:1-560-894-00	PIN, CONNECTOR 6P
CN002	♠:1-560-896-00	PIN, CONNECTOR 8P
CN003	♠:1-560-896-00	PIN, CONNECTOR 8P
CN004	♠:1-560-896-00	PIN, CONNECTOR 8P
CN005	♠:1-560-896-00	PIN, CONNECTOR 8P
CN501	♠:1-560-892-00	PIN, CONNECTOR 4P
CN502	♠:1-560-897-00	PIN, CONNECTOR 9P
CN503	♠:1-560-890-00	PIN, CONNECTOR 2P
CN504	♠:1-560-893-00	PIN, CONNECTOR 5P

When indicating parts by reference number, please include the board name.

TA-20

Ref.No.	Part No.	Description	Remark
		DIODE	
D003	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
D005	8-719-911-19	DIODE 1SS119	
D006	8-719-911-19	DIODE 1SS119	
D008	8-719-911-19	DIODE 1SS119	
D010	8-719-911-19	DIODE 1SS119	
D011	8-719-100-55	DIODE RD9.1EB3	
D020	8-719-911-19	DIODE 1SS119	
D021	8-719-911-19	DIODE 1SS119	
D022	8-719-911-19	DIODE 1SS119	
D501	8-719-911-19	DIODE 1SS119	
D502	8-719-911-19	DIODE 1SS119	
		IC	
IC001	8-758-852-00	IC CX-885B	
IC002	8-759-157-40	IC UPC574J	
IC501	8-759-800-46	IC LA7046	
		COIL	
L001	1-408-591-00	MICRO INDUCTOR 1UH	
L002	1-408-597-00	MICRO INDUCTOR 3.3UH	
L003	1-408-608-00	MICRO INDUCTOR 27UH	
L004	1-408-603-00	MICRO INDUCTOR 10UH	
L005	1-408-602-00	MICRO INDUCTOR 8.2UH	
L006	1-408-604-00	MICRO INDUCTOR 12UH	
L007	1-408-606-00	MICRO INDUCTOR 18UH	
L008	1-408-611-00	MICRO INDUCTOR 47UH	
L009	1-407-716-00	MICRO INDUCTOR 820UH	
L010	1-407-716-00	MICRO INDUCTOR 820UH	
L501	1-407-718-00	MICRO INDUCTOR 1.2MMH	
L502	1-407-508-00	MICRO INDUCTOR 22MMH	
		VARIABLE COIL	
LV501	1-408-523-00	COIL, VARIABLE	
		VOLUME BLOCK	
PS001	1-230-074-00	VOLUME BLOCK, PRESET	
		TRANSISTOR	
Q001	8-729-178-54	TRANSISTOR 2SC2785	
Q002	8-729-178-54	TRANSISTOR 2SC2785	
Q003	8-729-178-54	TRANSISTOR 2SC2785	
Q004	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q005	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q006	8-729-178-54	TRANSISTOR 2SC2785	
Q007	8-729-600-12	TRANSISTOR 2SK108-D	
Q008	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q009	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q010	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q011 ⚠	8-729-177-32	TRANSISTOR 2SD773	

Ref.No.	Part No.	Description	Remark
Q501	8-729-177-43	TRANSISTOR 2SD774	
Q502	8-729-194-47	TRANSISTOR 2SC945-P	
Q503	8-729-194-47	TRANSISTOR 2SC945-P	
Q504	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q505	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q506	8-729-178-54	TRANSISTOR 2SC2785	
Q507	8-729-178-54	TRANSISTOR 2SC2785	
Q509	8-729-178-54	TRANSISTOR 2SC2785	
Q510	8-729-178-54	TRANSISTOR 2SC2785	
		RESISTOR	
R001	1-247-839-00	CARBON 2.2K 5% 1/6W	
R002	1-247-845-00	CARBON 3.9K 5% 1/6W	
R003	1-247-879-00	CARBON 100K 5% 1/6W	
R004	1-247-869-00	CARBON 39K 5% 1/6W	
R005	1-247-829-00	CARBON 820 5% 1/6W	
R006	1-247-799-00	CARBON 47 5% 1/6W	
R007	1-247-891-00	CARBON 330K 5% 1/6W	
R008 ⚠	1-247-807-00	CARBON 100 5% 1/8W	F
R009	1-247-839-00	CARBON 2.2K 5% 1/6W	
R010	1-247-865-00	CARBON 27K 5% 1/6W	
R011	1-247-843-00	CARBON 3.3K 5% 1/6W	
R012	1-247-831-00	CARBON 1K 5% 1/6W	
R013	1-247-871-00	CARBON 47K 5% 1/6W	
R014	1-247-873-00	CARBON 56K 5% 1/6W	
R015	1-247-831-00	CARBON 1K 5% 1/6W	
R016	1-247-852-00	CARBON 7.5K 5% 1/6W	
R017	1-247-831-00	CARBON 1K 5% 1/6W	
R018	1-247-843-00	CARBON 3.3K 5% 1/6W	
R019	1-247-831-00	CARBON 1K 5% 1/6W	
R020	1-247-831-00	CARBON 1K 5% 1/6W	
R021	1-247-873-00	CARBON 56K 5% 1/6W	
R022	1-247-847-00	CARBON 4.7K 5% 1/6W	
R023	1-247-821-00	CARBON 390 5% 1/6W	
R024	1-247-821-00	CARBON 390 5% 1/6W	
R025	1-247-827-00	CARBON 680 5% 1/6W	
R026	1-247-847-00	CARBON 4.7K 5% 1/6W	
R027	1-247-817-00	CARBON 270 5% 1/6W	
R028	1-247-843-00	CARBON 3.3K 5% 1/6W	
R029	1-247-879-00	CARBON 100K 5% 1/6W	
R030	1-247-863-00	CARBON 22K 5% 1/6W	
R031	1-247-863-00	CARBON 22K 5% 1/6W	
R032	1-247-871-00	CARBON 47K 5% 1/6W	
R033	1-247-867-00	CARBON 33K 5% 1/6W	
R034	1-247-879-00	CARBON 100K 5% 1/6W	
R035	1-247-847-00	CARBON 4.7K 5% 1/6W	
R036	1-247-855-00	CARBON 10K 5% 1/6W	
R037	1-247-879-00	CARBON 100K 5% 1/6W	
R038	1-246-458-00	CARBON 240 5% 1/4W	
R039	1-247-899-00	CARBON 680K 5% 1/6W	
R040	1-247-903-00	CARBON 1M 5% 1/6W	
R041	1-247-885-00	CARBON 180K 5% 1/6W	
R042	1-247-869-00	CARBON 39K 5% 1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

3

Ref.No.	Part No.	Description				Remark
R043 ⚠	1-247-248-00	CARBON	2.2K	5%	1/2W	F
R044	1-247-841-00	CARBON	2.7K	5%	1/6W	
R045	1-247-862-00	CARBON	20K	5%	1/6W	
R046	1-246-456-00	CARBON	200	5%	1/4W	
R047	1-247-871-00	CARBON	47K	5%	1/6W	
R048	1-247-871-00	CARBON	47K	5%	1/6W	
R049	1-247-871-00	CARBON	47K	5%	1/6W	
R050	1-247-831-00	CARBON	1K	5%	1/6W	
R051	1-247-831-00	CARBON	1K	5%	1/6W	
R052	1-247-831-00	CARBON	1K	5%	1/6W	
R053	1-247-831-00	CARBON	1K	5%	1/6W	
R054	1-247-831-00	CARBON	1K	5%	1/6W	
R055	1-247-831-00	CARBON	1K	5%	1/6W	
R056	1-247-831-00	CARBON	1K	5%	1/6W	
R057	1-247-831-00	CARBON	1K	5%	1/6W	
R058	1-247-831-00	CARBON	1K	5%	1/6W	
R059	1-247-831-00	CARBON	1K	5%	1/6W	
R060	1-247-831-00	CARBON	1K	5%	1/6W	
R061	1-247-831-00	CARBON	1K	5%	1/6W	
R062	1-247-831-00	CARBON	1K	5%	1/6W	
R063	1-247-831-00	CARBON	1K	5%	1/6W	
R064	1-247-863-00	CARBON	22K	5%	1/6W	
R065	1-247-863-00	CARBON	22K	5%	1/6W	
R066	1-247-863-00	CARBON	22K	5%	1/6W	
R067 ⚠	1-247-084-00	CARBON	11	5%	1/4W	F
R068 ⚠	1-247-124-00	CARBON	510	5%	1/4W	F
R070	1-247-843-00	CARBON	3.3K	5%	1/6W	
R071	1-247-863-00	CARBON	22K	5%	1/6W	
R501	1-247-859-00	CARBON	15K	5%	1/6W	
R502	1-247-859-00	CARBON	15K	5%	1/6W	
R503	1-247-783-00	CARBON	10	5%	1/6W	
R504 ⚠	1-246-980-00	CARBON	3.3	5%	1/8W	F
R505	1-247-839-00	CARBON	2.2K	5%	1/6W	
R506	1-247-883-00	CARBON	150K	5%	1/6W	
R507	1-247-867-00	CARBON	33K	5%	1/6W	
R508	1-247-893-00	CARBON	390K	5%	1/6W	
R509	1-247-807-00	CARBON	100	5%	1/6W	
R510	1-247-839-00	CARBON	2.2K	5%	1/6W	
R511	1-247-839-00	CARBON	2.2K	5%	1/6W	
R512	1-247-903-00	CARBON	1M	5%	1/6W	
R513	1-247-863-00	CARBON	22K	5%	1/6W	
R514	1-247-849-00	CARBON	5.6K	5%	1/6W	
R515	1-247-855-00	CARBON	10K	5%	1/6W	
R516	1-247-865-00	CARBON	27K	5%	1/6W	
R517	1-247-847-00	CARBON	4.7K	5%	1/6W	
R518	1-247-855-00	CARBON	10K	5%	1/6W	
R519	1-247-869-00	CARBON	39K	5%	1/6W	
R520	1-247-843-00	CARBON	3.3K	5%	1/6W	
R521	1-247-855-00	CARBON	10K	5%	1/6W	
R522	1-247-839-00	CARBON	2.2K	5%	1/6W	
R523	1-247-871-00	CARBON	47K	5%	1/6W	
R524	1-247-855-00	CARBON	10K	5%	1/6W	
R525	1-247-867-00	CARBON	33K	5%	1/6W	

Ref.No.	Part No.	Description				Remark
R527	1-247-847-00	CARBON	4.7K	5%	1/6W	
R528	1-247-831-00	CARBON	1K	5%	1/6W	
R529	1-247-783-00	CARBON	10	5%	1/6W	
R530	1-247-863-00	CARBON	22K	5%	1/6W	
R531	1-247-863-00	CARBON	22K	5%	1/6W	
R533	1-247-877-00	CARBON	82K	5%	1/6W	
R534	1-247-865-00	CARBON	27K	5%	1/6W	
R535	1-247-821-00	CARBON	390	5%	1/6W	
R536	1-247-844-00	CARBON	3.6K	5%	1/6W	
R537	1-247-815-00	CARBON	220	5%	1/6W	
R538	1-210-825-00	SOLID	3.3M	5%	1/4W	
R540	1-247-851-00	CARBON	6.8K	5%	1/6W	
R541	1-247-871-00	CARBON	47K	5%	1/6W	
R542	1-247-823-00	CARBON	470	5%	1/6W	
R545 ⚠	1-212-869-00	FUSIBLE	33	5%	1/4W	F
R546	1-247-863-00	CARBON	22K	5%	1/6W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description
RV002	1-228-747-00	RES, ADJ, CARBON 4.7K
RV501	1-224-256-XX	RES, ADJ, METAL GLAZE 220K
RV502	1-228-752-00	RES, ADJ, CARBON 220K
RV503	1-228-744-00	RES, ADJ, CARBON 470
RV504	1-228-748-00	RES, ADJ, CARBON 10K

SWITCH

Ref.No.	Part No.	Description
S001	1-554-373-00	SWITCH, LEVER (AFT)

FILTER

Ref.No.	Part No.	Description
SF001	1-404-227-51	SAWF

TRANSFORMER

Ref.No.	Part No.	Description
T001	1-404-153-00	VIFT
T002	1-404-321-00	VIFT
T003	1-404-352-00	COIL, VIF
T004	1-404-352-00	COIL, VIF
T005	1-404-411-00	COIL, SIF
T501	1-433-237-00	TRANSFORMER, OSCILLATOR

POST PIN

Ref.No.	Part No.	Description
TP002♠:	3-846-049-11	PIN, LEAD
TP003♠:	3-846-049-11	PIN, LEAD
TP502♠:	3-846-049-11	PIN, LEAD
TP503♠:	3-846-049-11	PIN, LEAD
TP504♠:	3-846-049-11	PIN, LEAD
TP505♠:	3-846-049-11	PIN, LEAD
TP506♠:	3-846-049-11	PIN, LEAD

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
	A-6761-056-A	ACE ASSY (AUDIO, AUDIO ERASE, CTL)	
	1-417-063-00	TRANSFORMER, ANTENNA (EAC-24)	
	1-513-379-00	CONVERTER (EAC-25)	
	1-548-571-00	COUNTER, TAPE (MIDDLE TYPE)	
	1-551-139-00	CORD, CONNECTION	
	1-551-644-41	CORD, CONNECTION	
	⚠.1-551-964-00	CORD, POWER...US,E2,PX2 MODEL	
	⚠.1-551-331-21	CORD, POWER...E1,PX1 MODEL	
	⚠.2-231-019-00	CLAMPER CORD	
	8-825-508-10	HEAD, FE (FULL ERASE)	
L991	1-464-249-00	SENSOR, S COIL	
L992	1-464-250-00	SENSOR, T COIL	
M901	X-2621-202-0	ROTOR ASSY, D (DRUM MOTOR)	
	X-2621-204-2	STATOR ASSY, D (DRUM MOTOR)	
M902	8-838-042-01	MOTOR, DC (BHF-1907A) (CAPSTAN MOTOR)	
M903	♠:A-4910-021-A	R STATOR BOARD, COMPLETE (REEL MOTOR)	
	X-2622-201-0	ROTOR ASSY, R (REEL MOTOR)	
M904	A-6737-118-A	MOTOR ASSY, L (LOADING MOTOR)	
MD001	1-464-266-00	RF UNIT, COLOR (RFU-702)	
PM901	⚠.A-6749-080-B	SOLENOID BLOCK ASSY, PINCH	
PM902	⚠.1-454-348-00	SOLENOID, BRAKE PLUNGER	
S901	⚠.1-552-304-00	SWITCH, POWER VOLTAGE CHANGE ...E1,PX1 MODEL	
S991	1-554-374-00	SWITCH, LEVER (CASSETTE IN)	
S992	1-554-374-00	SWITCH, LEVER (REC PROOF)	
S993	1-553-539-00	SWITCH, MICRO (THREADING END)	
S994	1-553-718-00	SWITCH, MICRO (UNTHREADING END)	
S996	1-554-372-00	SWITCH, ANTENNA CHANGE	
T901	⚠.1-447-577-00	TRANSFORMER, POWER...US,E2,PX2 MODEL	
	⚠.1-447-693-00	TRANSFORMER, POWER...E1,PX1 MODEL	
TB991	1-417-092-00	DISTRIBUTOR, ANTENNA (UHF)	

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
1-417-063-00	TRANSFORMER, ANTENNA (EAC-24)	
1-506-444-00	ADAPTOR PLUG...PX1 MODEL	
1-513-379-00	CONVERTER (EAC-25)	
1-556-971-00	WIRE ASSY, FEEDER	
1-551-644-41	CORD, CONNECTION	
3-671-402-00	INDICATOR, ACCESSORY	
3-671-873-00	CASE, ACCESSORY	
3-674-317-00	LID, ACCESSORY CASE	
3-677-503-00	SHEET, PROTECTION	
3-679-326-00	CUSHION (UPPER)	
3-679-327-00	CUSHION (LOWER)	
3-679-328-00	INDIVIDUAL CARTON ...US MODEL	
3-679-356-00	INDIVIDUAL CARTON ...E1 MODEL	
3-679-339-00	INDIVIDUAL CARTON ...E2 MODEL	
3-679-340-00	INDIVIDUAL CARTON ...PX1,PX2 MODEL	
3-682-661-00	CARD, CAUTION...E1,PX1 MODEL	
3-701-630-00	BAG, POLYETHYLENE	
3-773-431-21	MANUAL, INSTRUCTION	
3-773-431-41	MANUAL, INSTRUCTION ...E1,E2 MODEL	
3-795-581-21	INSTRUCTION ...US,PX2 MODEL	
3-701-311-00	LABEL, COLOR (RED) ...E1 MODEL	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 5
ADJUSTMENT

For adjustment, the TA-12 board is partly different from the TA-20 board.

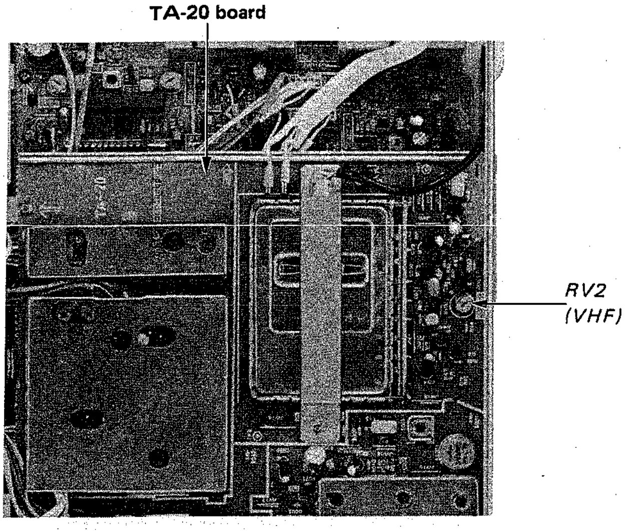
Use together with the adjustment manual of the SL-2400 which has been already published.

5-6. TUNER BLOCK SYSTEM ADJUSTMENTS

1. Tuner AGC Adjustment

1) At maximum contrast, receive any VHF TV broadcast signal.
2) Turn RV2 clockwise until snow noise can be seen on the TV monitor screen.
3) Turn RV2 counterclockwise slowly and leave the adjustment at the point where the snow noise just disappears.
4) Receive telecast signals on all of the channels in succession and confirm that there is no beat due to cross-modulation, breakdown of the picture or snow noise.

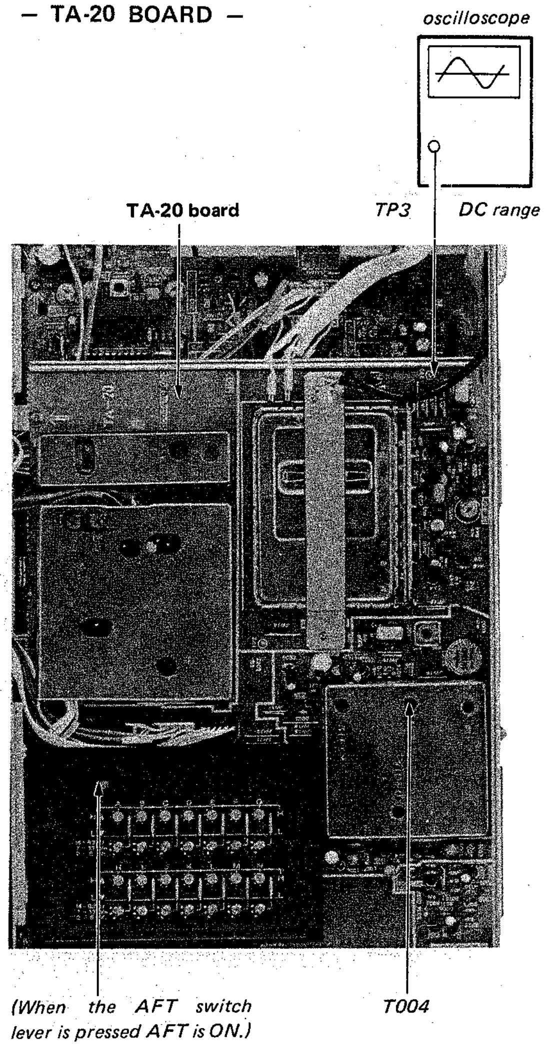
– TA-20 BOARD –



2. AFT Adjustment

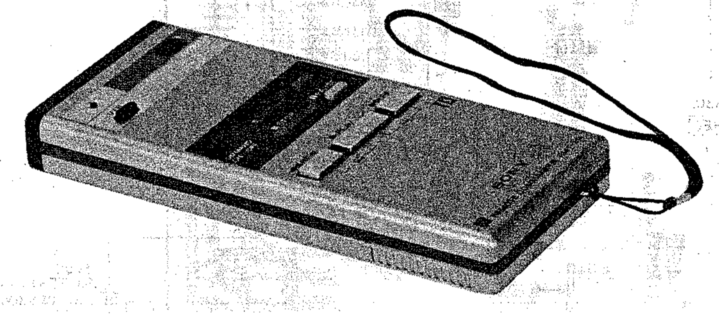
1) Receive any TV broadcast signal.
2) Turn the AFT switch OFF (with the preset cover removed).
3) Turn the preset potentiometer until a 920 kHz beat can be seen, then turn it counterclockwise slowly and leave it set at the point where the 920 kHz beat just disappears.
4) Turn the AFT switch ON (press the AFT switch lever).
5) Connect an oscilloscope to TP3 and adjust T004 so that the DC level becomes 6.0V. Confirm that there is no disappearance of color or 920 kHz beat.
6) Next, turn the AFT switch back OFF (with the preset cover removed) and turn the preset potentiometer until the picture quality just starts to deteriorate. Leave it set at that point.
7) Turn the AFT switch ON and OFF repeatedly to check the AFT operation.
8) Return the preset potentiometer to the position where it was set in step 3).

– TA-20 BOARD –



RMT-314

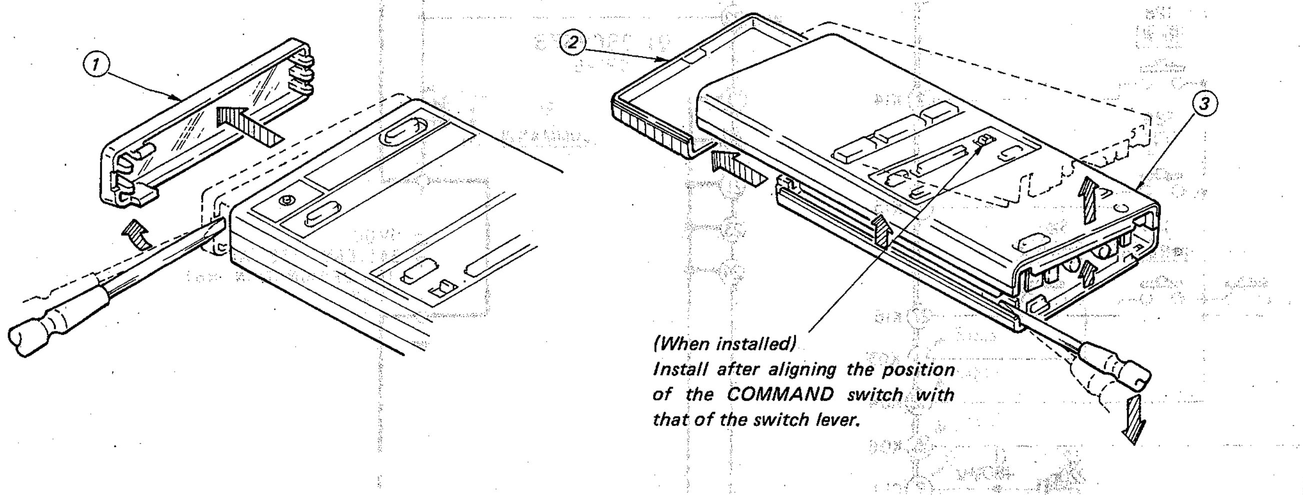
SERVICE MANUAL



SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3 V dc, 2 size AA batteries (IEC designation R6)
Dimensions	Approx. 65 × 20 × 153 mm (w/h/d) (2⁵/₈ × ¹³/₁₆× 6¹/₈ inches)
Weight	Approx. 140 g (5 oz) incl. batteries

DISASSEMBLY



(When installed)
Install after aligning the position of the COMMAND switch with that of the switch lever.

REMOTE CONTROL UNIT

SONY

ACC

The RMT-314 Wireless Remote Commander attached to SL-2400 has two types (new and former) of pc boards.

The modified points are mainly as follows:

New	Former
IR-17 board	IR-9 board
IC CX-7947	IC CX-786

☆ ☆

1. OUTLINE

1-1. FEATURE

This unit is a wireless remote control commander used for operating Sony's VCR SL-2400 freely at a distant place.

1-2. REMOTE CONTROL SIGNAL

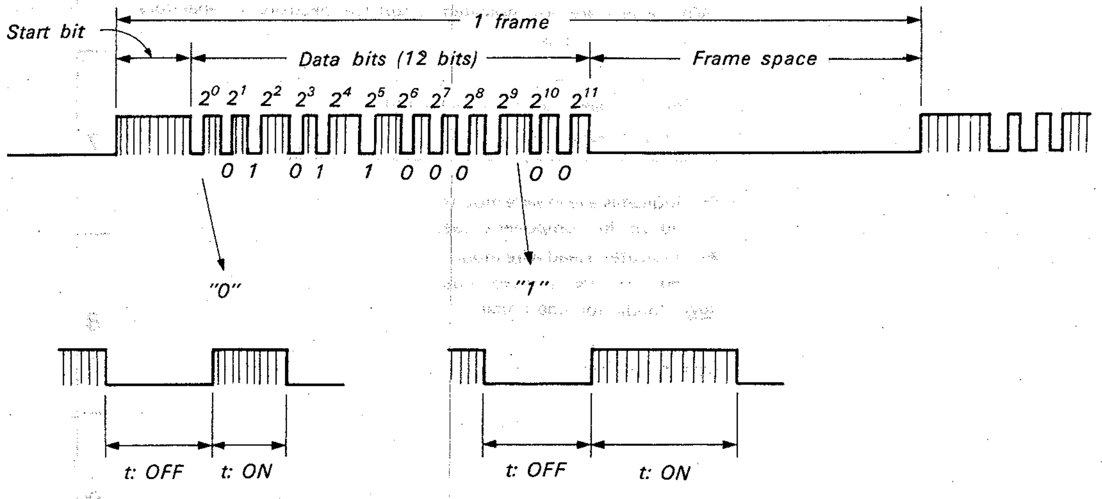
As shown in the figure below, one frame of the signal consists of a start bit and data bits (12 bits), which are periodically repeated.

"0" and "1" of each data bit are discriminated by a length of t: ON time.

The example shown below gives 001011000100 if read from the position of a bit 2^0.

The time definition is shown in the table below.

		Time	Deviation
Start bit		2.4 ms	± 0.1 ms
Data "0"	**t: OFF**	0.6 ms	± 0.1 ms
	t: ON	0.6 ms	± 0.1 ms
Data "1"	**t: OFF**	0.6 ms	± 0.1 ms
	t: ON	1.2 ms	± 0.1 ms
1 frame		45 ms	± 0.1 ms
Carrier		40 kHz	± 200 Hz



Assignment table of remote control code

No.	Input signal	Data code 2^0	2^1	2^2	2^3	2^4	2^5	2^6	Category code 2^7	2^8	2^9	2^{10}	2^{11}
22	POWER	1	0	1	0	1	0	0	0	1	0	0	0
25	STOP ■	0	0	0	1	1	0	0	0	1	0	0	0
26	PAUSE ▮▮	1	0	0	1	1	0	0	0	1	0	0	0
27	PB ▶	0	1	0	1	1	0	0	0	1	0	0	0
28	REW ◀◀	1	1	0	1	1	0	0	0	1	0	0	0
29	FF ▶▶	0	0	1	1	1	0	0	0	1	0	0	0
30	REC ●	1	0	1	1	1	0	0	0	1	0	0	0
43	TV/VTR	0	1	0	1	0	1	0	0	1	0	0	0

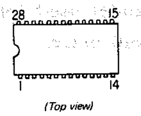
Voltage value of IC1

Unit: V

Mode \ Pin	5	4	3	2	1	27
POWER						0.13
STOP ■	0.13					
PAUSE ▮▮		0.13				
PLAY ▶			0.13			
REW ◀◀				0.13		
FF ▶▶					0.13	
REC ●						0.13
TV/VTR			0.13			

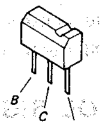
(The voltage value is 0V, unless otherwise specified.)

CX7947

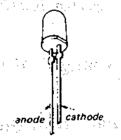


(Top view)

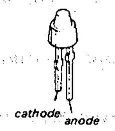
2SC2673



SE303AX


anode
cathode

SLP144B

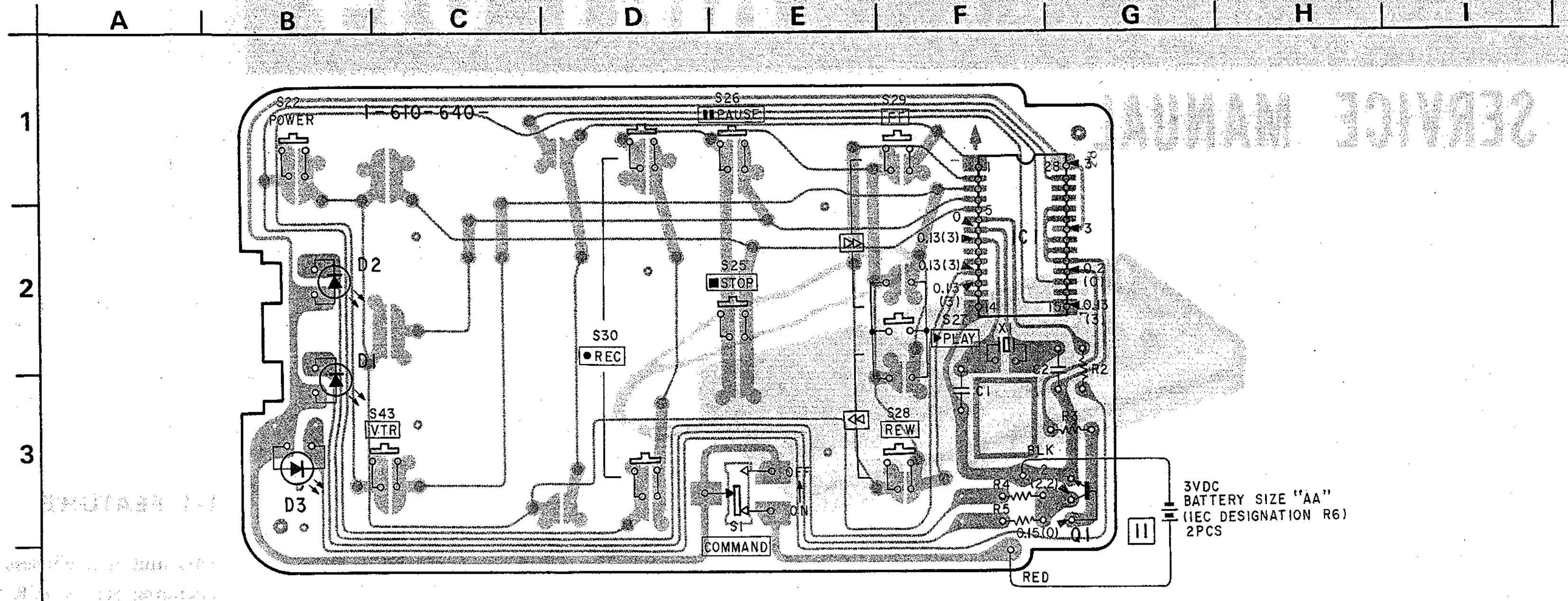

cathode
anode

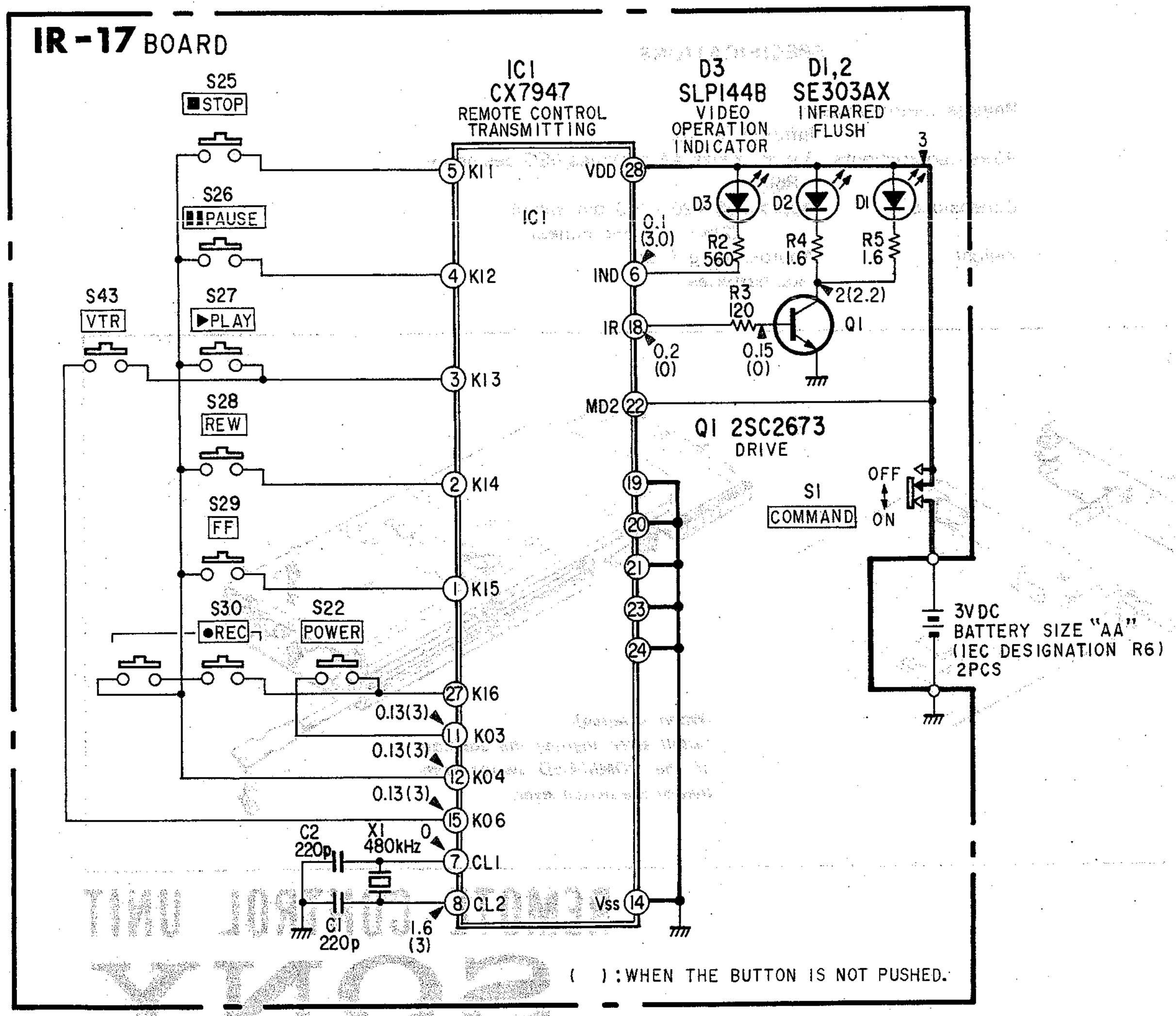
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- ▬ : B + bus.

The voltage value is measured using a digital tester (10MΩ/V).

- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ▨ Conductor side (inner)
- ▨ Conductor side
- ▨ B + pattern

2. DIAGRAM (NEW)


A
B
C
D
E
F
G
H
I
S22
POWER
1-610-640-
S26
▮▮PAUSE
S29
FF
D2
D1
D3
S43
VTR
S30
●REC
S25
■STOP
S27
▶PLAY
S28
REW
S1
COMMAND
OFF
ON
X1
C1
C2
R2
R3
R4
R5
Q1
IC
1
5
14
28
15
0
0.13(3)
0.13(3)
0.13
(3)
3
3
0.2
(0)
0.13
(3)
2
(2.2)
0.15(0)
BLK
RED
3VDC
BATTERY SIZE "AA"
(IEC DESIGNATION R6)
2PCS


IR-17 BOARD
IC1
CX7947
REMOTE CONTROL
TRANSMITTING
D3
SLP144B
VIDEO
OPERATION
INDICATOR
D1,2
SE303AX
INFRARED
FLUSH
S25
■STOP
S26
▮▮PAUSE
S43
VTR
S27
▶PLAY
S28
REW
S29
FF
S30
●REC
S22
POWER
5 KI1
4 KI2
3 KI3
2 KI4
1 KI5
27 KI6
11 KO3
12 KO4
15 KO6
7 CL1
8 CL2
VDD 28
IND 6
IR 18
MD2 22
19
20
21
23
24
Vss 14
IC1
D3
D2
D1
R2
560
R4
1.6
R5
1.6
R3
120
Q1
0.1
(3.0)
0.2
(0)
0.15
(0)
2(2.2)
3
0.13(3)
0.13(3)
0.13(3)
0
1.6
(3)
C2
220p
C1
220p
X1
480kHz
Q1 2SC2673
DRIVE
S1
COMMAND
OFF
ON
3VDC
BATTERY SIZE "AA"
(IEC DESIGNATION R6)
2PCS
( ) : WHEN THE BUTTON IS NOT PUSHED.

Assignment table of remote control code

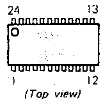
No.	Input signal	Data code 2⁰	2¹	2²	2³	2⁴	2⁵	2⁶	Category code 2⁷	2⁸	2⁹	2¹⁰	2¹¹
22	POWER	1	0	1	0	1	0	0	0	1	0	0	0
25	STOP ■	0	0	0	1	1	0	0	0	1	0	0	0
26	PAUSE ❚❚	1	0	0	1	1	0	0	0	1	0	0	0
27	PB ▶	0	1	0	1	1	0	0	0	1	0	0	0
28	REW ◀◀	1	1	0	1	1	0	0	0	1	0	0	0
29	FF ▶▶	0	0	1	1	1	0	0	0	1	0	0	0
30	REC ●	1	0	1	1	1	0	0	0	1	0	0	0
43	TV/VTR	0	1	0	1	0	1	0	0	1	0	0	0

Voltage value of IC1 Unit: V

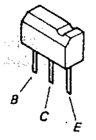
Mode \ Pin	4	5	6	7	8	9
POWER						0.13
STOP ■	0.13					
PAUSE. ❚❚		0.13				
PB ▶			0.13			
REW ◀◀				0.13		
FF ▶▶					0.13	
REC ●						0.13
TV/VTR			0.13			

(The voltage value is 0V, unless otherwise specified.)

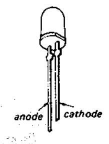
CX786


24
13
1
12
(Top view)

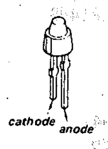
2SC2673



SE303AX


anode
cathode

SLP144B


cathode
anode

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- ▬ : B + bus.

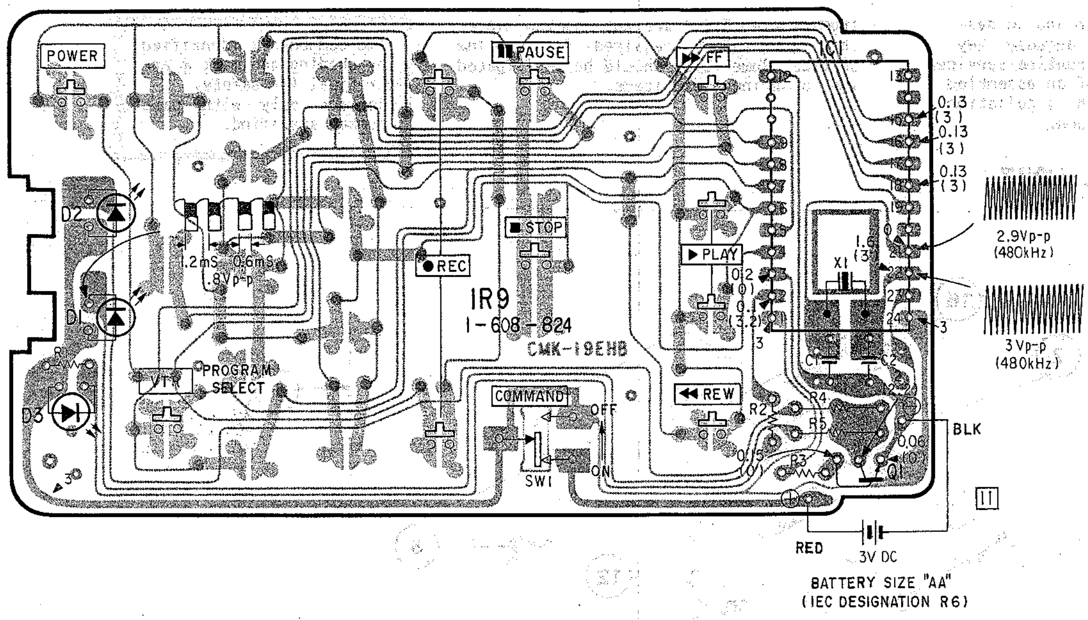
The voltage value is measured using a digital tester (10MΩ/V).

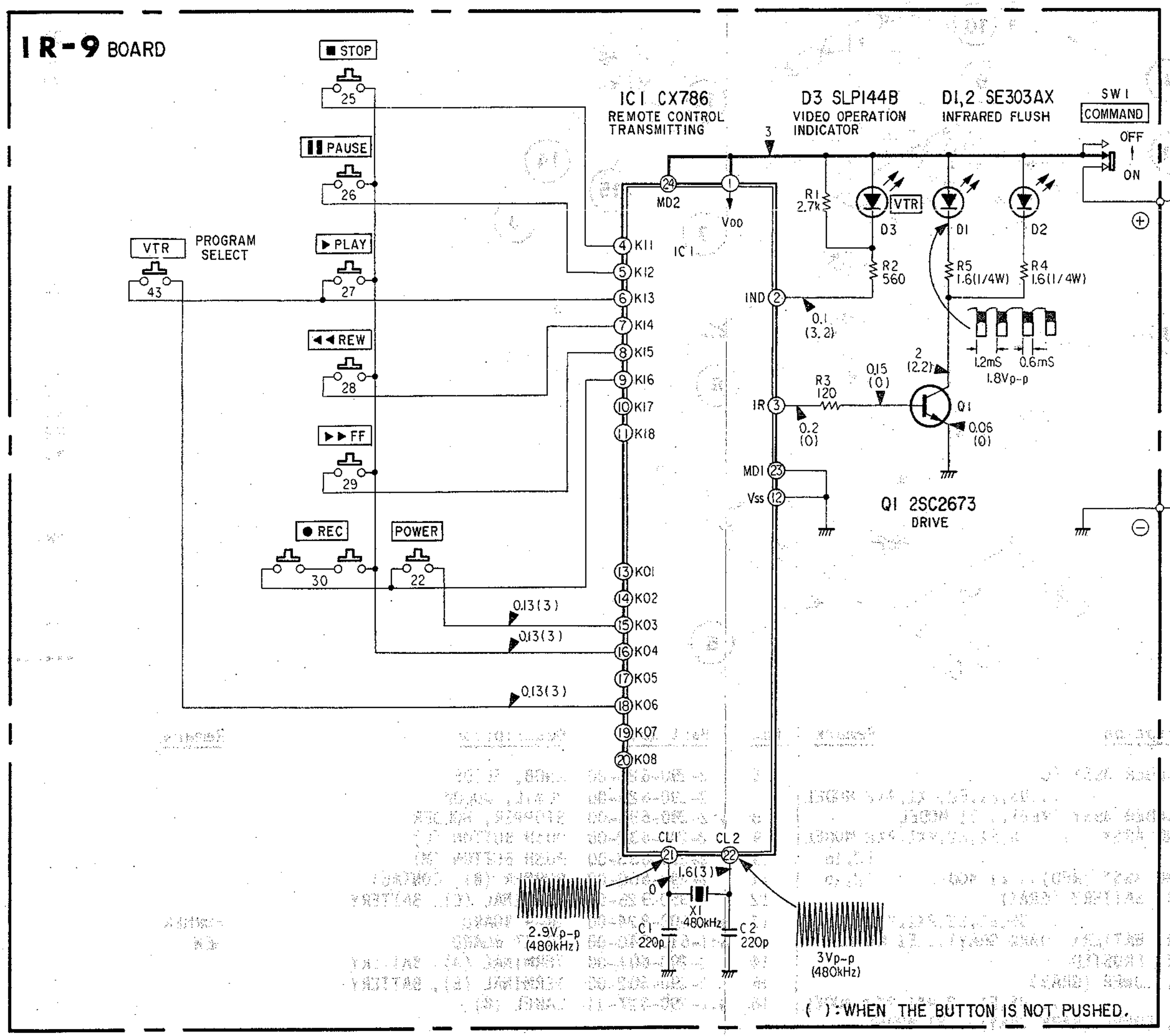
When indicating parts by reference number, please include the board name.

- ○— indicates a lead wire mounted on the component side.
- ●— indicates a lead wire mounted on the printed side.
- ▨ Conductor side (inner)
- ▨ Conductor side
- ▨ B + pattern

2. DIAGRAM (FORMER)

A B C D E F G H I


POWER
PAUSE
FF
IC1
STOP
PLAY
REC
IR9
1-608-824
CMK-19EHB
VTR
PROGRAM SELECT
COMMAND
OFF
ON
SW1
REW
D1
D2
D3
X1
C1
R2
R3
R4
R5
Q1
1.2mS 0.6mS
1.8Vp-p
0.13
(3)
0.13
(3)
0.13
(3)
0.2
(0)
0.1
(3.2)
0.15
0.06
2.9Vp-p
(480kHz)
3Vp-p
(480kHz)
BLK
RED
3V DC
BATTERY SIZE "AA"
(IEC DESIGNATION R6)
II

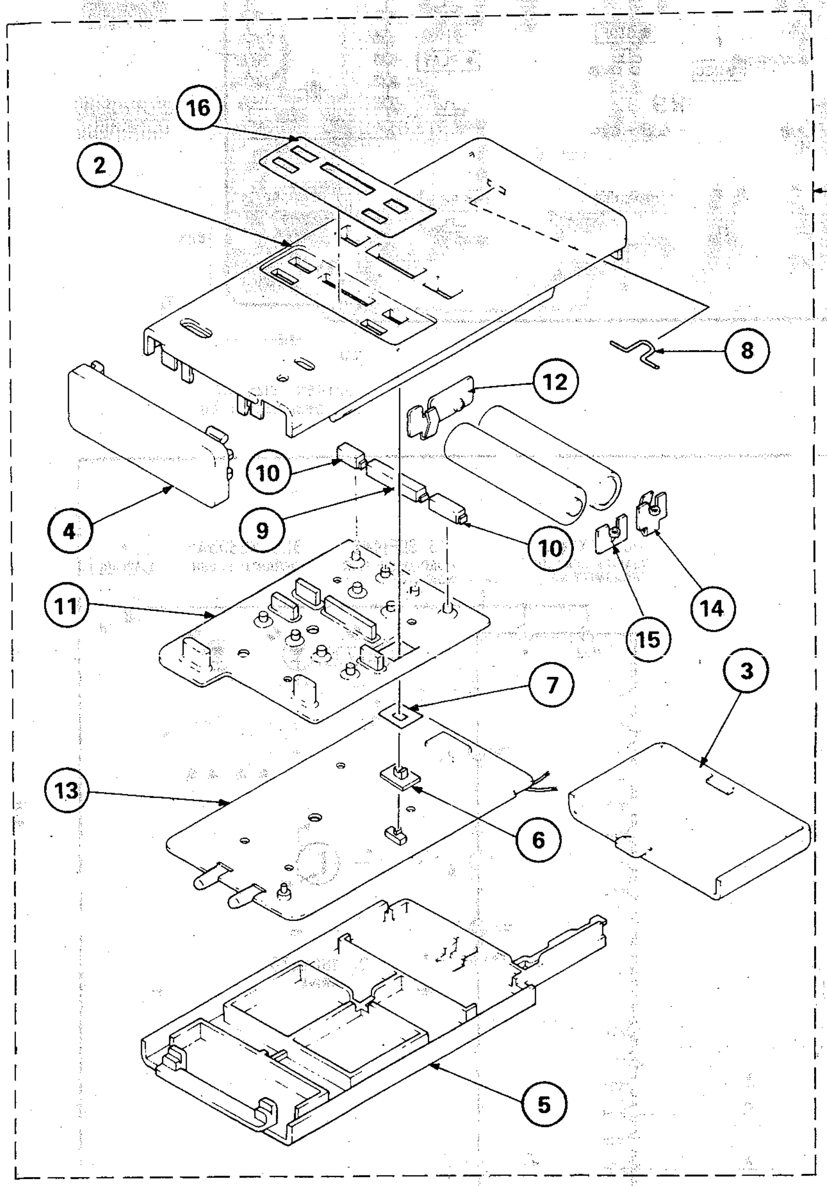

IR-9 BOARD
■ STOP
25
❚❚ PAUSE
26
▶ PLAY
27
◀◀ REW
28
▶▶ FF
29
● REC
30
POWER
22
VTR
43
PROGRAM SELECT
IC1 CX786
REMOTE CONTROL TRANSMITTING
D3 SLP144B
VIDEO OPERATION INDICATOR
D1,2 SE303AX
INFRARED FLUSH
SW1
COMMAND
OFF
ON
MD2
VDD
IC1
KI1
KI2
KI3
KI4
KI5
KI6
KI7
KI8
KO1
KO2
KO3
KO4
KO5
KO6
KO7
KO8
IND
IR
MD1
Vss
CL1
CL2
R1 2.7k
VTR
D3
D1
D2
R2 560
R5 1.6(1/4W)
R4 1.6(1/4W)
0.1 (3.2)
1.2mS 0.6mS
1.8Vp-p
R3 120
0.15 (0)
2 (2.2)
Q1
0.2 (0)
0.06 (0)
Q1 2SC2673
DRIVE
0.13(3)
0.13(3)
0.13(3)
1.6(3)
2.9Vp-p (480kHz)
C1 220p
X1 480kHz
C2 220p
3Vp-p (480kHz)
3V DC
BATTERY SIZE "AA"
(IEC DESIGNATION R6)
2PCS
( ):WHEN THE BUTTON IS NOT PUSHED.

3. EXPLODED VIEW

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REMOTE CONTROL UNIT



No.	Part No.	Description	Remark
1	A-6765-126-A	COMMANDER ASSY (C) ...US,E1,E2,PX1,PX2 MODEL	
	A-6765-380-A	COMMANDER ASSY (RED)...E1 MODEL	
2	X-2290-610-0	CASING ASSY (C)...US,E1,E2,PX1,PX2 MODEL	12,16
	X-2290-637-0	CASING ASSY (RED)...E1 MODEL	12,16
3	2-290-606-00	COVER, BATTERY (GRAY) ...US,E1,E2,PX1,PX2 MODEL	
	2-290-606-11	COVER, BATTERY (DARK GRAY)...E1 MODEL	
4	2-290-608-00	PLATE, FROSTED	
5	2-290-611-00	CASE, LOWER (GRAY) ...US,E1,E2,PX1,PX2 MODEL	
	2-290-611-11	CASE, LOWER (DARK GRAY)...E1 MODEL	
6	2-290-628-00	KNOB, SLIDE	
7	2-290-629-00	PLATE, COLOR	
8	♠:2-290-630-00	STOPPER, HOLDER	
9	2-290-632-00	PUSH BUTTON (L)	
10	2-290-633-00	PUSH BUTTON (M)	
11	2-290-650-00	RUBBER (B), CONTACT	
12	4-350-925-00	TERMINAL (C), BATTERY	
13	♠:1-608-824-00	IR-9 BOARD	FORMER
	♠:1-610-640-00	IR-17 BOARD	NEW
14	2-290-601-00	TERMINAL (A), BATTERY	
15	2-290-602-00	TERMINAL (B), BATTERY	
16	♠:2-290-627-11	LABEL (B)	

4. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board name.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : µF, PF : µµF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : µH

Ref.No.	Part No.	Description				Remark
	♠:1-610-640-00	IR-17 BOARD ***********				NEW
	♠:1-608-824-00	IR-9 BOARD **********				FORMER
	2-290-601-00	TERMINAL (A), BATTERY				
	2-290-602-00	TERMINAL (B), BATTERY				
		CAPACITOR				
C1	1-102-110-00	CERAMIC	220PF	10%	50V	
C2	1-102-110-00	CERAMIC	220PF	10%	50V	
		DIODE				
D1	8-719-193-03	DIODE SE303AX				
D2	8-719-193-03	DIODE SE303AX				
D3	8-719-901-44	DIODE SLP144B				
		IC				
IC1	8-759-902-22	IC CX-7947				NEW
IC1	8-759-907-86	IC CX-786				FORMER
		TRANSISTOR				
Q1	8-729-967-32	TRANSISTOR 2SC2673-Q				
		RESISTOR				
R1	1-247-841-00	CARBON	2.7K	5%	1/6W	FORMER
R2	1-247-825-00	CARBON	560	5%	1/6W	
R3	1-247-809-00	CARBON	120	5%	1/6W	
R4	1-246-406-00	CARBON	1.6	5%	1/4W	
R5	1-246-406-00	CARBON	1.6	5%	1/4W	
		SWITCH				
SW1	1-553-977-31	SWITCH, SLIDE				
		CRISTAL				
X1	1-527-476-00	OSCILLATOR, CERAMIC				

****

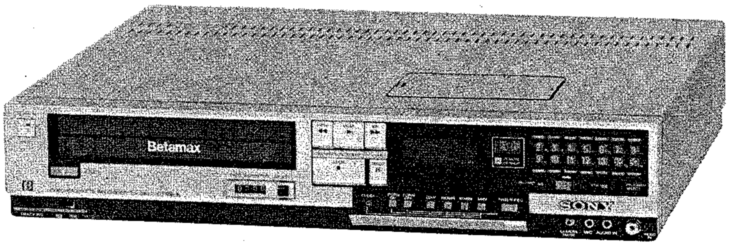
ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
3-701-620-00	BAG, POLYETHILENE	
4-352-958-00	STRAP, HAND	

SL-2400

ADJUSTMENT MANUAL

US Model
E Model
PX Model



711B CHASSIS

June, 1983

Also refer to SERVICE MANUAL.

Beta
VIDEO
CASSETTE RECORDER
SONY®

MICROFILM

Consumer

TABLE OF CONTENTS

Section Title Page

1. PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Disassembly of Cabinet 3
1-2. Removal of RP-8 Board 4
1-3. Removal of TA-12 Board 4
1-4. Opening of SS-13 Board 5
1-5. Removal of Power Block 5
1-6. Operation of the Unit with the FL Cassette Compartment Removed 6
  1-6-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed 6
  1-6-2. Playback without Cassette Installed 6
  1-6-3. How to Put in Recording Mode without Cassette Installed 6
1-7. How to Load, Thread Unload and Unthread with the Power Off 7
  1-7-1. Manual Loading and Unloading 7
  1-7-2. Manual Threading and Unthreading ... 7
1-8. Tools and Fixtures Required for Servicing ... 8

2. PERIODIC CHECK AND MAINTENANCE

2-1. Post-Repair Maintenance 9
  2-1-1. Cleaning of Rotating Head Disk Assembly 9
  2-1-2. Cleaning of the Tape Movement System 9
  2-1-3. Cleaning of the Drive System 9
2-2. Periodic Check Items 10

3. CHECK, ADJUSTMENT AND REPLACEMENT PROCEDURES

3-1. Replacement of Rotating Head Disk Assembly 11
  3-1-1. Removal of the Rotating Head Disk Assembly 11
  3-1-2. Mounting of the Rotating Head Disk Assembly 11
3-2. Video Head Dihedral Check and Adjustment 12
3-3. Replacement and Adjustment of the Drum Assembly 13
  3-3-1. Replacement of the Drum Assembly ... 13
  3-3-2. Adjustment of the Motor Gap when Replacing the Drum Assembly 14
3-4. Replacement of the Capstan Motor 14
  3-4-1. Removal of the Capstan Motor 14
3-5. Removal of the S Coil Sensor 15
3-6. Removal of the FL Cassette Compartment Assembly 15
3-7. Adjustment of the FL Cassette Compartment 16
  3-7-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly 16
  3-7-2. Cassette OFF Switch Operation Check and Adjustment 16
  3-7-3. Cassette ON Switch Operation Check and Adjustment 17
  3-7-4. Checking and Adjustment of the Cassette Door Assembly 17
  3-7-5. Mounting the FL Cassette Compartment Assembly 18
3-8. Removal of the No. 2 and No. 3 Guides ... 18
  3-8-1. Removal of the No. 2 Guide 18
  3-8-2. Removal of the No. 3 Guide 18
3-9. Replacement and Adjustment of the S Threading Ring 19
  3-9-1. Preparation to Remove the S Threading Ring Removal of the ACE Assembly, FE Head and Threading Motor 19
  3-9-2. Removal of the S Threading Ring 21
  3-9-3. Slider-Stopper Mounting Check 22
  3-9-4. S Threading Ring Mounting and Position Adjustment 22
3-10. Pinch Snap-Fit Limiter Gap Check and Adjustment 23
3-11. Microswitch Position Check and Adjustment 24
  3-11-1. Threading End Switch (TE Switch) Position Check and Adjustment 24
  3-11-2. Unthreading End Switch (UTE Switch) Position Check and Adjustment 25
3-12. Removal and Adjustment of the Reel Motor Section 26
  3-12-1. Removal of the Reel Motor Section 26
  3-12-2. Adjustment of the Brake Plunger 26
  3-12-3. Adjustment of the Soft Brake 27
  3-12-4. Adjustment of the Position of the Tension Regulating Lever 27
3-13. Adjustment of the Forward and Back Tension 28
3-14. Adjustment of the Forward Torque 29

4. TAPE PATH ADJUSTMENT

4-1. Tracking Adjustment 31
  4-1-1. Preparation for Adjustment 32
  4-1-2. Entrance Side Adjustment 32
  4-1-3. Exit Side Adjustment 34
4-2. Adjustments after Replacement of the ACE Assembly 35
  4-2-1. Exit Side Tracking Adjustment 35
  4-2-2. CTL Head (ACE Assembly) Position Adjustment 37
  4-2-3. Audio Head (ACE Assembly) Azimuth Adjustment 38
4-3. Adjustments after Replacement of the Capstan Motor 39
  4-3-1. Capstan Shaft Vertical Adjustment 39
  4-3-2. Exit Side Tracking Adjustment 39
4-4. How to Inspect the Tape Traveling when Adjusting the Tape Path 41

5. ELECTRICAL ADJUSTMENTS

5-1. Power Supply Section Checks 43
5-2. System Control Section Checks 44
5-3. Servo System Adjustments 44
  5-3-1. Drum Servo System Adjustments 44
  5-3-2. Capstan Servo System Adjustments 44
5-4. Video System Adjustments 50
5-5. Audio System Adjustments 66
5-6. Tuner Block System Adjustments 70

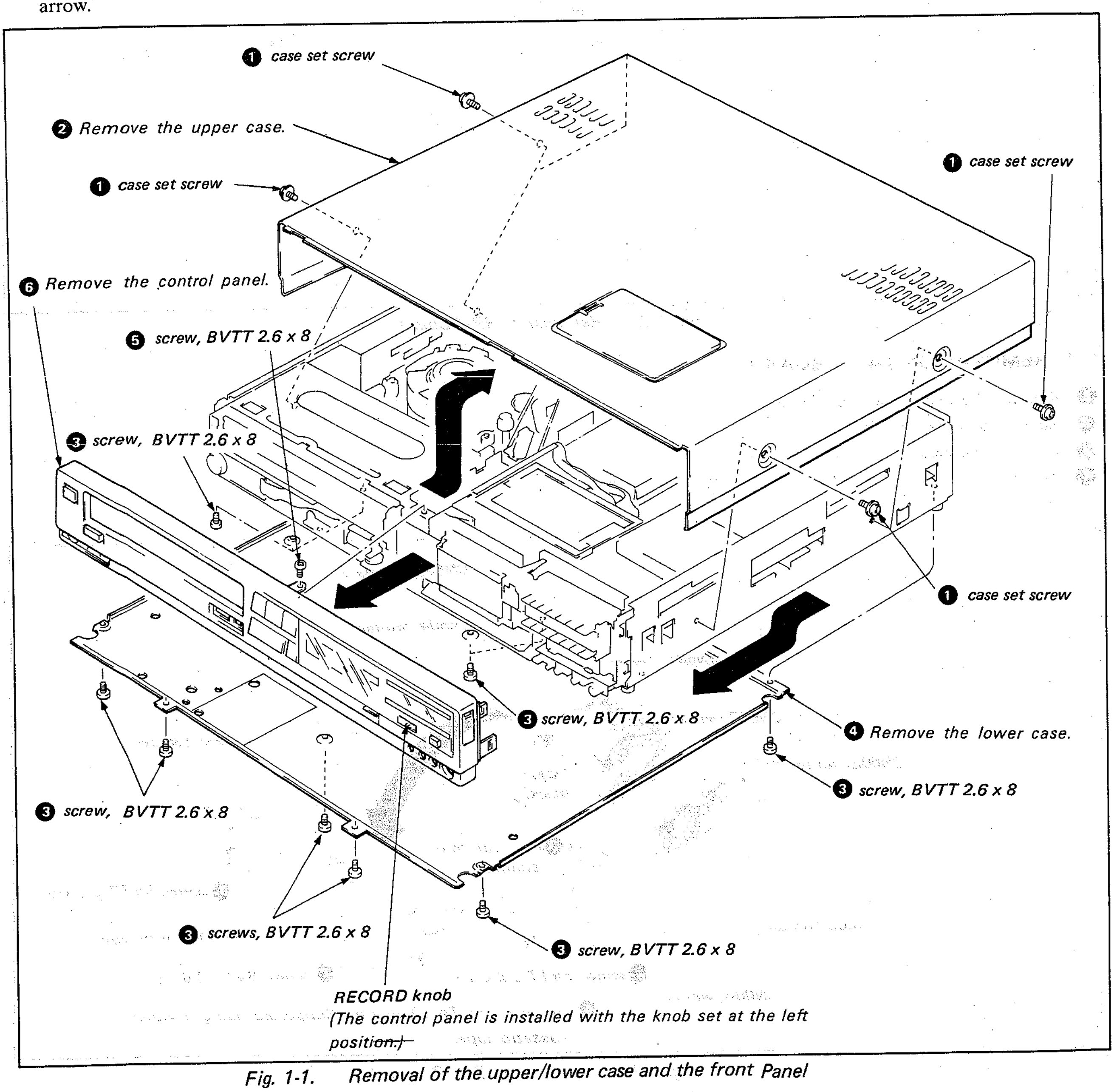
SECTION 1

PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. DISASSEMBLY OF CABINET

Removal of the Upper/Lower Case and the Front Panel

❶ Remove the four case set screws.
❷ Remove the upper case in the direction indicated by the arrow.
❸ Remove the nine screws (BVTT2.6×8).
❹ Remove the lower case.
❺ Remove a screw (BVTT2.6×8).
❻ Remove the front panel in the direction indicated by the arrow.


❶ case set screw
❷ Remove the upper case.
❶ case set screw
❶ case set screw
❻ Remove the control panel.
❺ screw, BVTT 2.6 x 8
❸ screw, BVTT 2.6 x 8
❶ case set screw
❸ screw, BVTT 2.6 x 8
❹ Remove the lower case.
❸ screw, BVTT 2.6 x 8
❸ screw, BVTT 2.6 x 8
❸ screws, BVTT 2.6 x 8
❸ screw, BVTT 2.6 x 8

RECORD knob
(The control panel is installed with the knob set at the left position.)

Fig. 1-1. Removal of the upper/lower case and the front Panel

1-2. REMOVAL OF RP-8 BOARD

❶ Remove the two screws (BVTT2.6×6).
❷ Remove the RP-8 board block.
❸ Pull out the connectors CN2 (white) and CN4 (white).

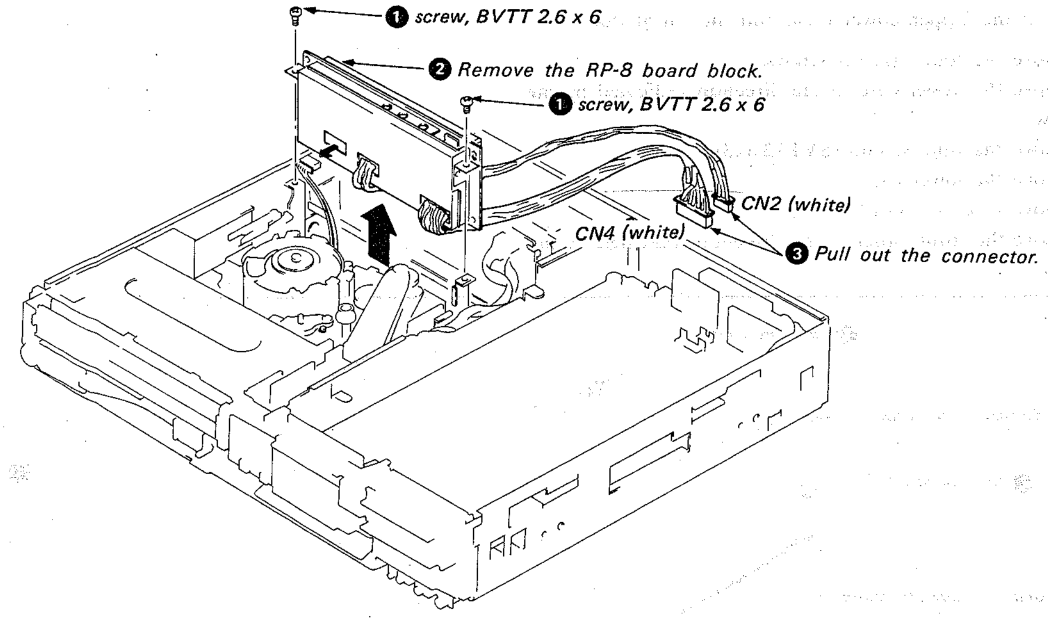

❶ screw, BVTT 2.6 x 6
❷ Remove the RP-8 board block.
❶ screw, BVTT 2.6 x 6
CN2 (white)
CN4 (white)
❸ Pull out the connector.

Fig. 1-2. Removal of RP-8 board

1-3. REMOVAL OF TA-12 BOARD

❶ Remove the two screws (BVTT2.6×6).
❷ Remove a screw (BVTT2.6×6).
❸ Pull out the eight connectors.
❹ Remove the TA-12 board. (Supported using a videocassette tape.)

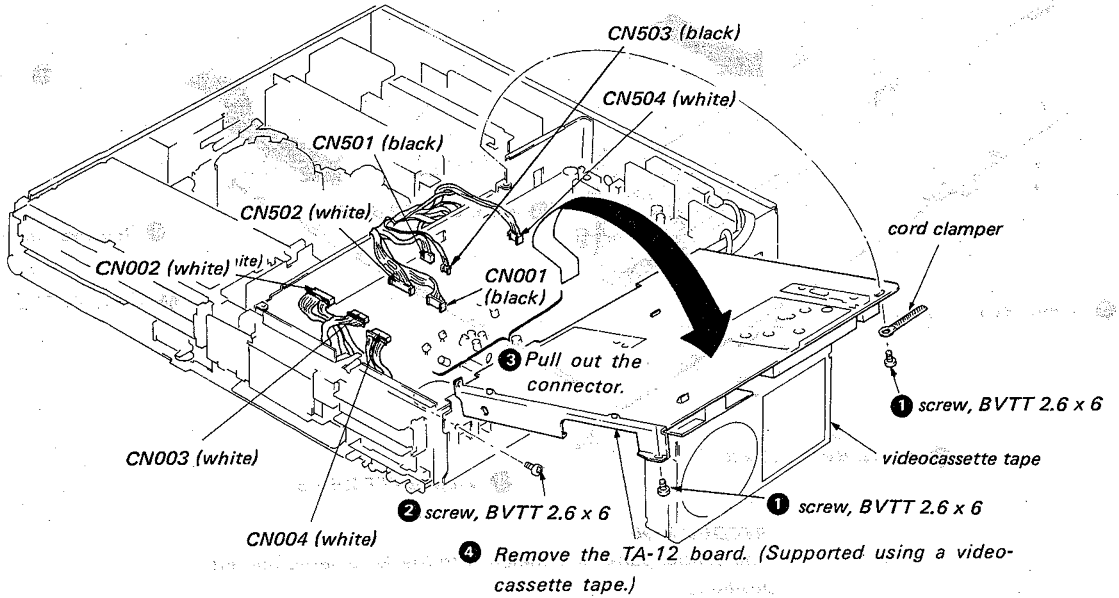
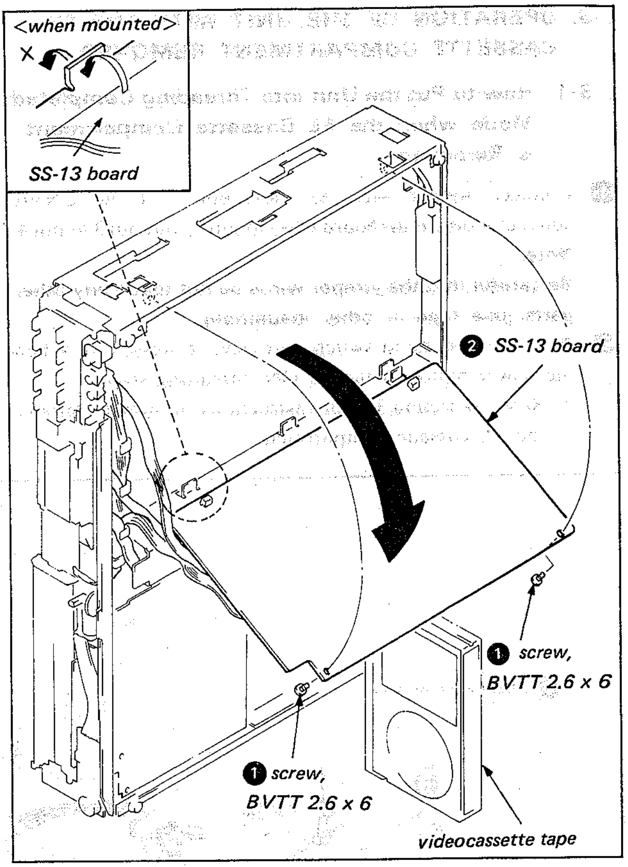

CN503 (black)
CN504 (white)
CN501 (black)
CN502 (white)
CN002 (white)
CN001 (black)
cord clamper
❸ Pull out the connector.
❶ screw, BVTT 2.6 x 6
videocassette tape
CN003 (white)
❷ screw, BVTT 2.6 x 6
❶ screw, BVTT 2.6 x 6
CN004 (white)
❹ Remove the TA-12 board. (Supported using a videocassette tape.)

Fig. 1-3. Removal of TA-12 board

1-4. OPENING OF SS-13 BOARD

❶ Remove the two screws (BVTT2.6×6).
❷ Remove the SS-13 board. (Supported using a videocassette tape.)

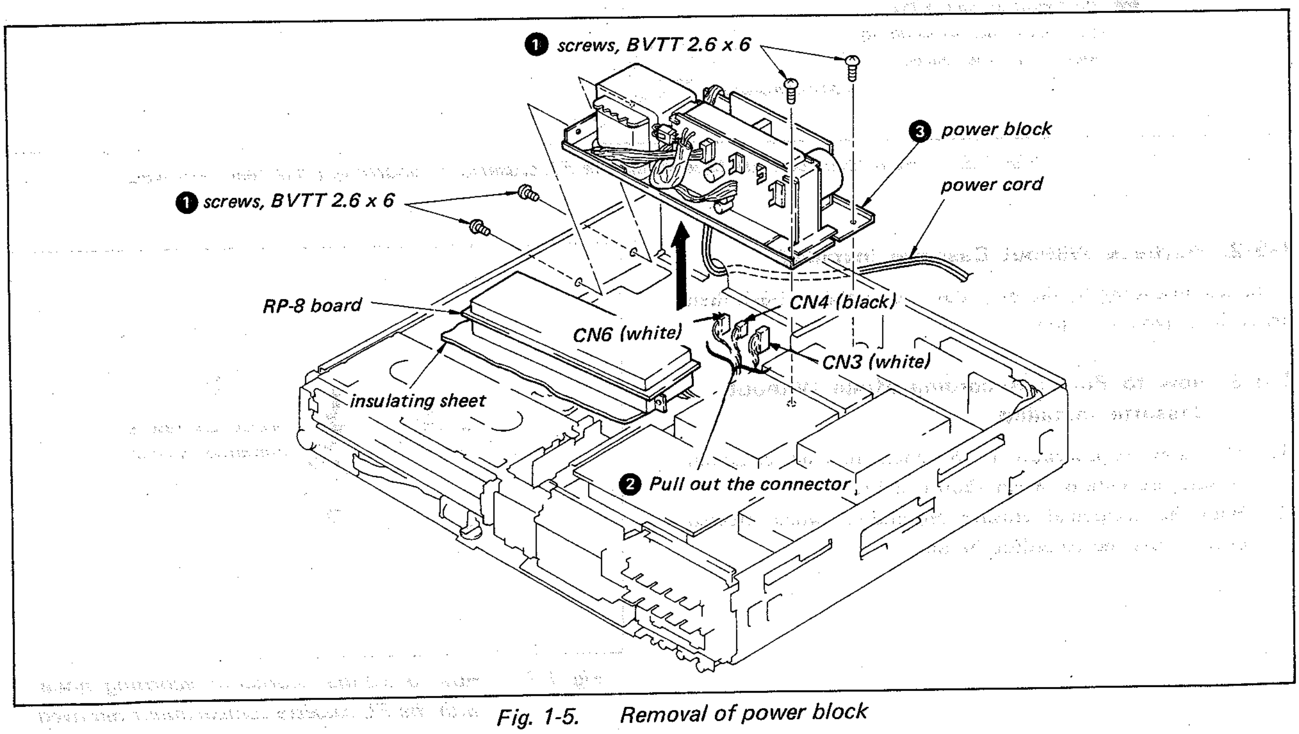


<when mounted>
X
SS-13 board
❷ SS-13 board
❶ screw, BVTT 2.6 x 6
❶ screw, BVTT 2.6 x 6
videocassette tape

Fig. 1-4. Opening of SS-13 board

1-5. REMOVAL OF POWER BLOCK

❶ Remove the four screws (BVTT2.6×6).
❷ Pull out the three connectors CN3 (white), CN4 (black) and CN6 (white).
❸ Remove the power block.



❶ screws, BVTT 2.6 x 6
❸ power block
power cord
❶ screws, BVTT 2.6 x 6
RP-8 board
CN4 (black)
CN6 (white)
CN3 (white)
insulating sheet
❷ Pull out the connector

Fig. 1-5. Removal of power block

1-6. OPERATION OF THE UNIT WITH THE FL CASSETTE COMPARTMENT REMOVED

1-6-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed

❶ Connect jumper wires to short pin 1 of the CN301 connector on circuit board CS-3 to pin 2, and pin 3 to pin 4.

Note:

Be careful that the jumper wires do not touch any other parts (use tape or other insulation).

❷ Press the cassette-in switch and leave it pressed in. When the power button is turned ON, threading starts.

* Refer to section 3-6 for instructions on how to remove the FL cassette compartment.

[How to EJECT in this condition]

- Press the EJECT button. When unthreading is completed and the internal gear starts to turn, turn the power OFF.

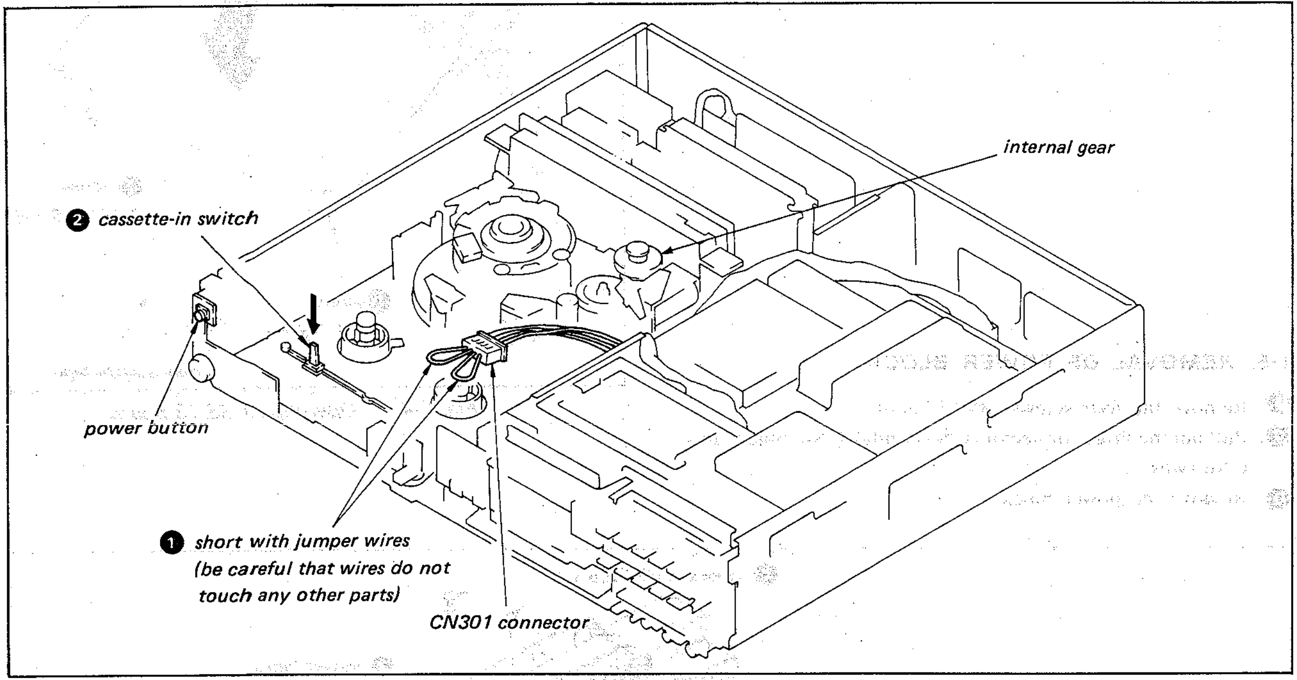

internal gear
❷ cassette-in switch
power button
❶ short with jumper wires (be careful that wires do not touch any other parts)
CN301 connector

Fig. 1-6. How to thread the tape when the FL cassette compartment has been removed

1-6-2. Playback Without Cassette Installed

Complete threading by the procedure described in 1-6-1, then press the playback button.

1-6-3. How to Put in Recording Mode Without Cassette Installed

1. Thread by the procedure in 1-6-1, then press the accidental erasure prevention switch shown in Fig. 1-7.
2. With the accidental erasure prevention switch pressed down, press the recording button.

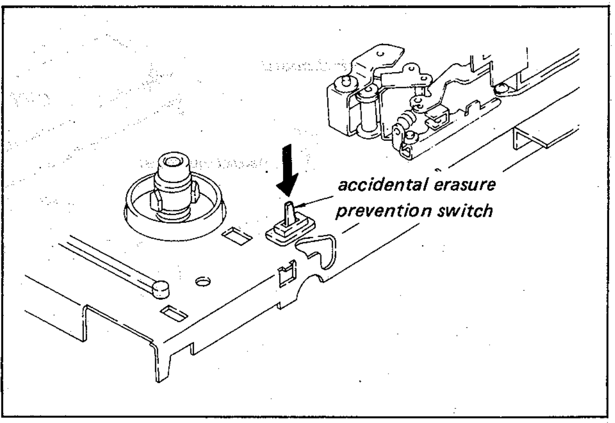

accidental erasure prevention switch

Fig. 1-7. How to put the recorder in recording mode with the FL cassette compartment removed

1-7. HOW TO LOAD, THREAD, UNLOAD AND UNTHREAD WITH THE POWER OFF

1-7-1. Manual Loading and Unloading

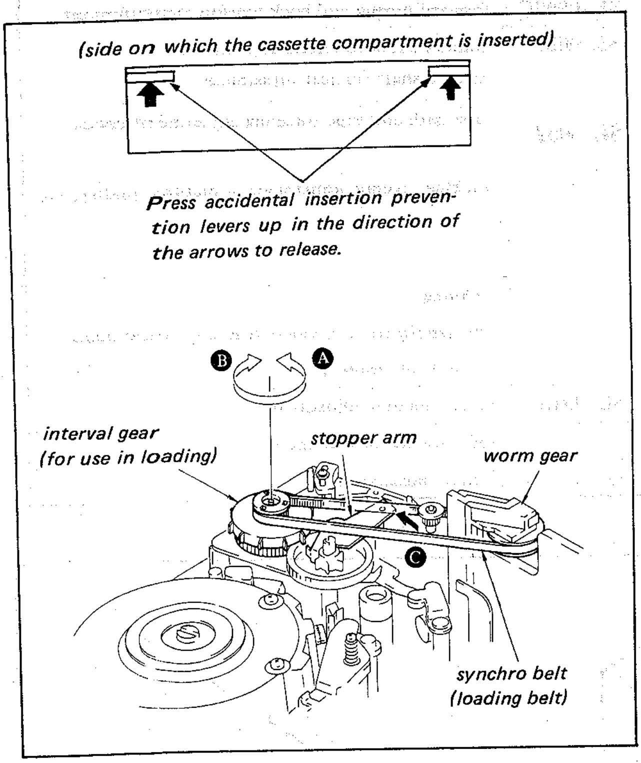

(side on which the cassette compartment is inserted)
Press accidental insertion prevention levers up in the direction of the arrows to release.
Ⓑ
Ⓐ
interval gear (for use in loading)
stopper arm
worm gear
Ⓒ
synchro belt (loading belt)

Fig. 1-8. Manual loading and unloading

1) Release the right and left accidental insertion prevention levers inside the cassette compartment, then press the stopper arm in the direction of arrow Ⓒ and release the internal gear stop.
2) Turn the internal gear manually in the direction of arrow Ⓐ until loading is completed.
3) To unload, turn the internal gear in the direction of arrow Ⓑ.

Note:
When the loading belt has been removed, load and unload by turning the worm gear manually.

1-7-2. Manual Threading and Unthreading

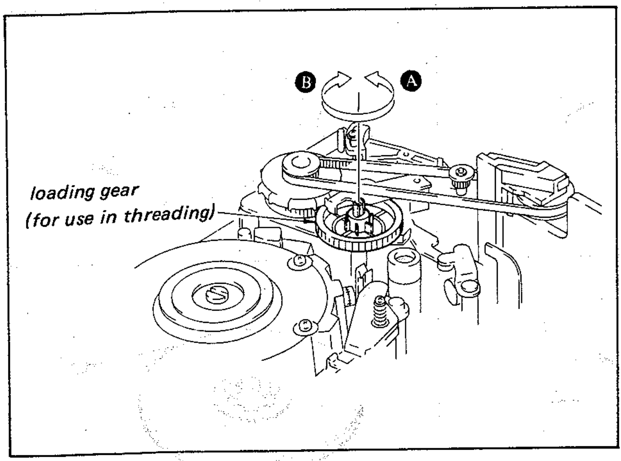

Ⓑ
Ⓐ
loading gear (for use in threading)

Fig. 1-9. Manual threading and unthreading

1) Turn the loading gear in the direction of arrow Ⓐ until loading is completed.
2) To unthread, turn the loading gear in the direction of arrow Ⓑ.

Note:
Always turn the loading gear sideways by hand. Never use a screwdriver or other tool.

1-8. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref.No.	Name	Part Code	Carved Jig No.	Use and Remarks
J-1	Torque Measurement Tape	J-6080-003-C	SL-0003C	forward torque and back tension measurement
J-2	Parallel Plate	J-6086-750-A	SL-0657	audio/CTL head lateral adjustment capstan shaft vertical adjustment
J-3	Dental Mirror (handle) Dental Mirror (mirror)	J-6080-029-A J-6080-030-1	SL-5052	tape path and tape traveling adjustment check
J-4	Alignment Tape (KR5-1M)	8-969-995-82	——	tracking, overall adjustment of picture quality, etc.
J-5	Cleaning Fluid	Y-2031-001-0	——	
J-6	Thickness Gauge	9-911-053-00		
J-7	Chamois Cloth	2-034-697-00	——	cleaning
J-8	Head Demagnetizer	widely available	——	demagnetization of video head and audio head
J-9	Cleaning Cassette Tape	8-888-004-00	——	video head cleaning
J-10	Dihedral Adjustment Screw	J-6080-013-1	SL-0013	video dihedral adjustment
J-11	Sector Type Gauge (50g)	7-732-050-20		soft braking measurement
J-12	Reel Table Tension Gauge	J-6080-011-A	SL-0011	torque measurement

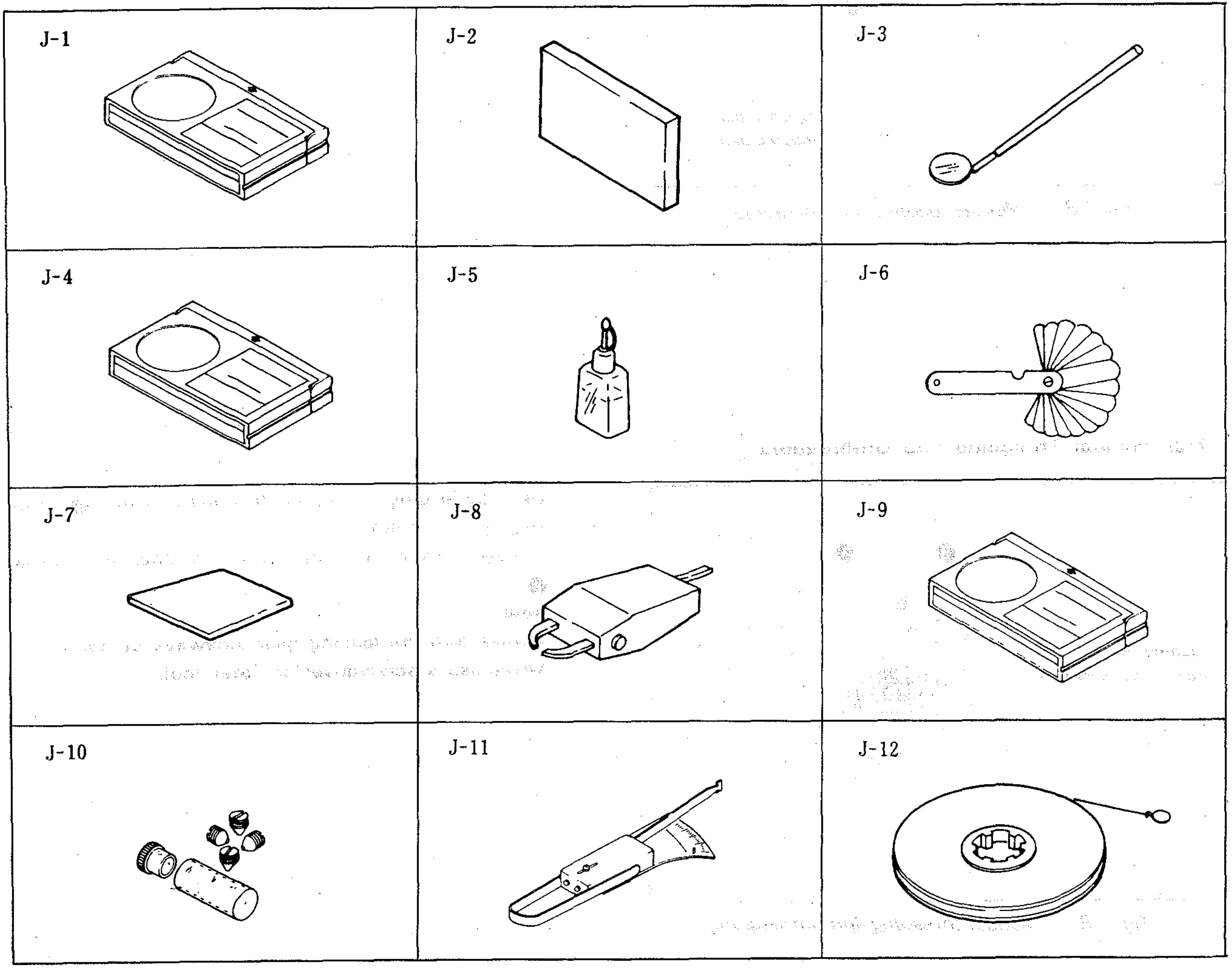


Fig. 1-10. Tools and fixtures required for servicing

SECTION 2
PERIODIC CHECK AND MAINTENANCE

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

2-1. POST-REPAIR MAINTENANCE

The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1-1. Cleaning of Rotating Head Disk Assembly

1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a right angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-1-2. Cleaning of the Tape Movement System

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in in cleaning fluid.

2-1-3. Cleaning the Drive System

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

parts requiring cleaning

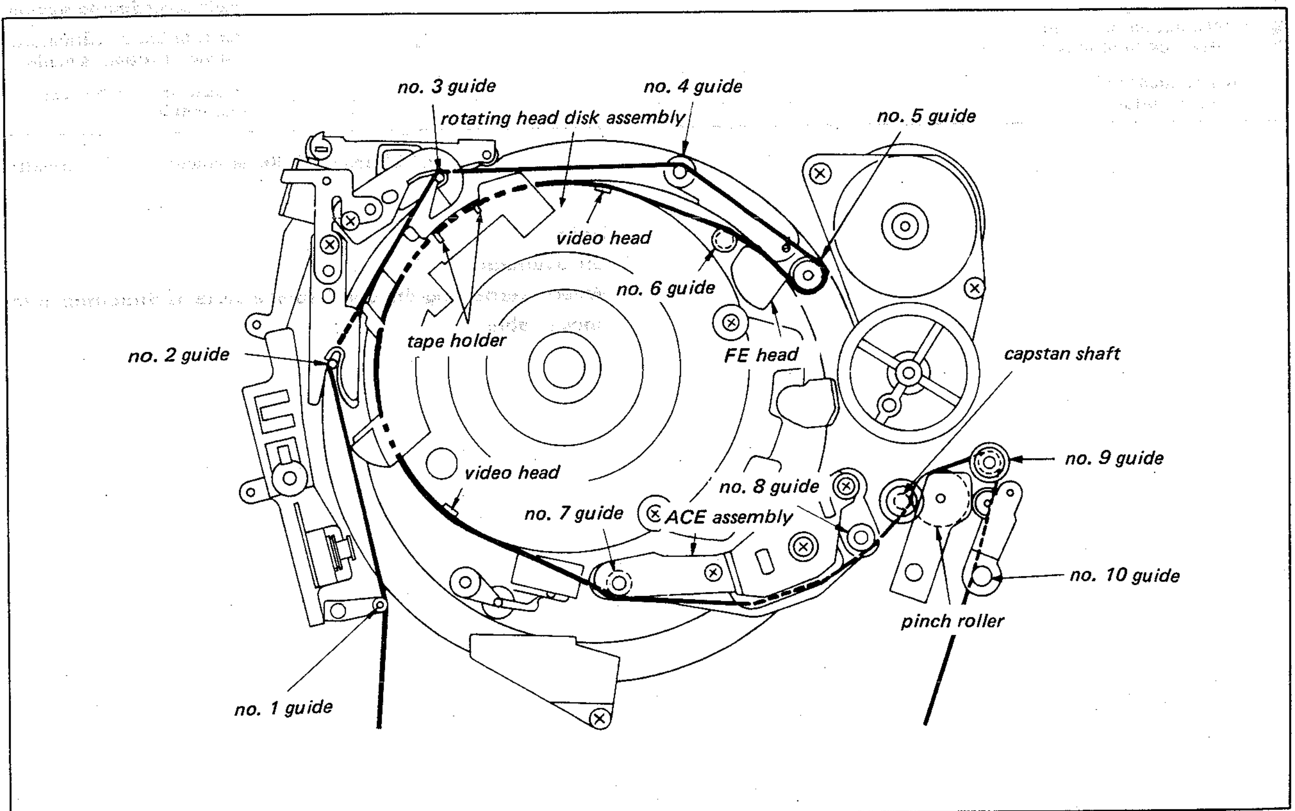

no. 3 guide
no. 4 guide
rotating head disk assembly
no. 5 guide
video head
no. 6 guide
no. 2 guide
tape holder
FE head
capstan shaft
no. 9 guide
video head
no. 8 guide
no. 7 guide
ACE assembly
no. 10 guide
pinch roller
no. 1 guide

Fig. 2-1. Parts requiring cleaning

2-2. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, accoring to user's operating hours.

Maintenance & Check		Operating Hours (H) Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Trans-Portation System	Cleaning of tape transportation system	——	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y	——	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y	——	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt (synchro belt)	3-679-119-00	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	• This cleaning must be done whenever a repair is made.
	Cleaning of iron core and opening of solenoid	——	–	–	–	○	–	–	–	○	–	–	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section Specified value: adjust to 30 ± 5 g•cm (When measured with torque cassette tape)
	Confirmation of brake system		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section
	Confirmation of record & playback functions		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 70 ± 5 g•cm (SL-0003C)

○ Cleaning ★ Replacement ☆ Confirmation

Note:
On overhaul
When overhauling the unit, replace parts as indicated in the above table.

SECTION 3

CHECK, ADJUSTMENT AND REPLACEMENT PROCEDURES

3-1. REPLACEMENT OF ROTATING HEAD DISK ASSEMBLY

3-1-1. Removal of the Rotating Head Disk Assembly (Fig. 3-1)

① Remove the two screws that hold the damper assembly in place, then remove the damper assembly.

② Use a hexagonal wrench to remove the hexagonal socket bolt that holds the upper drum assembly in place, then remove the upper drum assembly.

Note:

Turn the upper drum to remove, being careful not to move the adjusting plate. Movement of the adjusting plate will have a great effect on the tape path, so caution is required.

③ Unsolder the rotating head disk relay plate (4 red and white leads).

④ Remove the two hexagonal socket bolts holding rotating head disk assembly ⑤ in place, then remove the rotating head disk assembly.

Note:

Be careful not to touch the head tip with the hand or bang anything against it.

3-1-2. Mounting of the Rotating Head Disk Assembly (Fig. 3-1)

1) Insert rotating head disk ⑤ in place, being careful of the direction so that the red and white leads are in the right places.
2) Tighten hexagonal socket bolt ④ and solder the lead wires.

Note:

Be careful to solder the lead wires correctly and not to break any wires.

3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate. While pressing the two points that determine the height, tighten hexagonal socket bolt ②.

Note:

When inserting the upper drum, be careful that it does not touch the head tip.

Note:

When replacing the rotating drum head, it can happen that the rotating head disk assembly will be hard to remove. In such a case, remove it using the method explained below (Fig. 3-2).

① Remove the hexagonal socket bolts that hold the rotating head disk assembly in place.

② When the head disk is jammed on tight and is hard to remove, screw the hexagonal socket bolts removed in step ① into the threaded holes removed from the original holes by 90°. Tighten them a little at a time.

The head disk will be lifted up by the two screws and will come off easily.

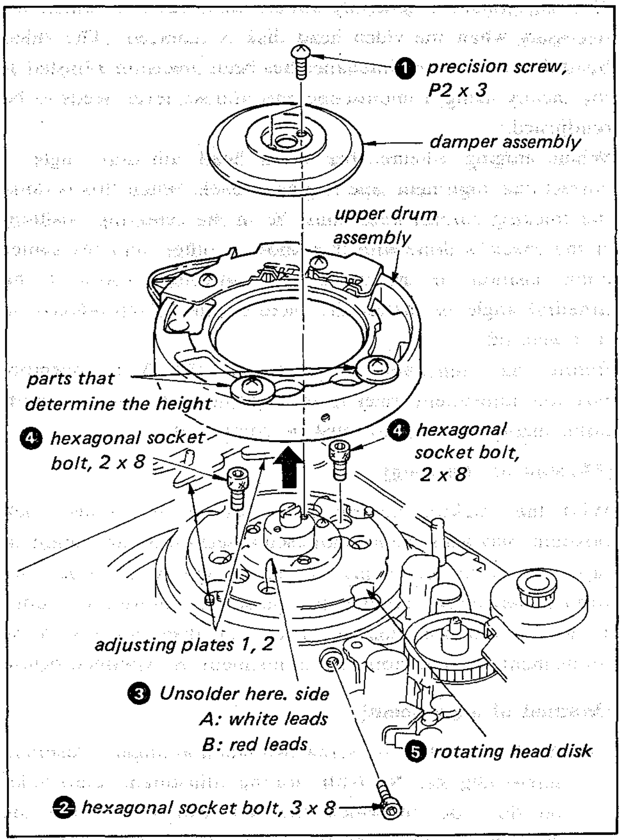

① precision screw, P2 x 3
damper assembly
upper drum assembly
parts that determine the height
④ hexagonal socket bolt, 2 x 8
④ hexagonal socket bolt, 2 x 8
adjusting plates 1, 2
③ Unsolder here. side A: white leads B: red leads
⑤ rotating head disk
② hexagonal socket bolt, 3 x 8

Fig. 3-1. Removal of the rotating head disk assembly I

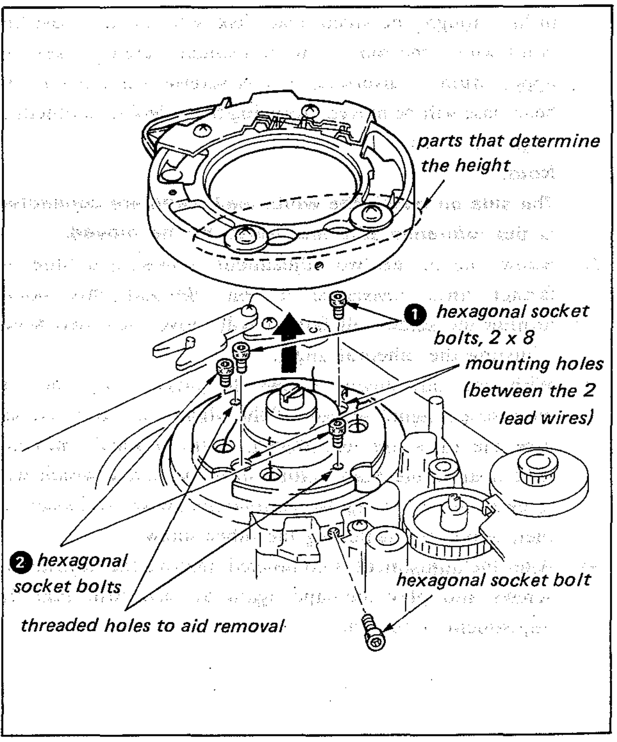

parts that determine the height
① hexagonal socket bolts, 2 x 8
mounting holes (between the 2 lead wires)
② hexagonal socket bolts
hexagonal socket bolt
threaded holes to aid removal

Fig. 3-2. Removal of the rotating head disk assembly II

3-2. VIDEO HEAD DIHEDRAL CHECK AND ADJUSTMENT

This adjustment is generally unnecessary, but it is sometimes necessary when the video head disk is replaced. (The video head disk used for maintenance has been precision adjusted at the factory using a microscope and almost never needs to be readjusted.)

When judging whether the video head dihedral angle is correct, the alignment tape is played back. When this is done the tracking control knob must be in the centering position. If the check is done with this knob in other than the center click position (if the tracking is off-center), even if the dihedral angle is correct the picture will be reproduced as if it were off.

Before this adjustment is performed, the ACE assembly position adjustment (refer to the section where the tape path adjustment is described) must be completed.

[Method of checking]

With the tracking control knob set to the center click position, play back the βII monoscope section of the alignment tape. Check to see if any of the vertical monoscope lines immediately below the switching pulse are reproduced double. If not, the dihedral angle is correct and does not have to be adjustment. If so, perform the adjustment as explained below.

[Method of adjustment]

1) As shown in Fig. 3-3, screw two dihedral angle adjustment screws (Jig Ref. No. J-10) into the adjustment screw holes on the side on which the red lead wires from the video head are connected, until the top of the screw is level with the video head disk. (If they are not screwed in far enough, the video head disk will not turn past the point where the top of the adjustment screw strikes the upper drum. Conversely, if it is screwed in too far, the head base will be moved, throwing the video head dihedral angle way off.)
   Note:
   The side on which the white lead wires are connected is the reference side and must not be moved.
2) Screw one of the two adjustment screws in a little bit farther until resistance is felt. Beyond this point, turning the screw still farther will move the video head, adjusting the dihedral angle.
3) With the adjustment screws in place, play the βII monoscope signal section of the alignment tape and see how the lines are reproduced. If the vertical lines are split apart more than before, turn the screw which was screwed in more tightly counterclockwise to loosen it, then adjust by tightening the other screw.
4) After the adjustment is completed, remove the adjustment screws and play the tape again to reconfirm that the adjustment is correct.

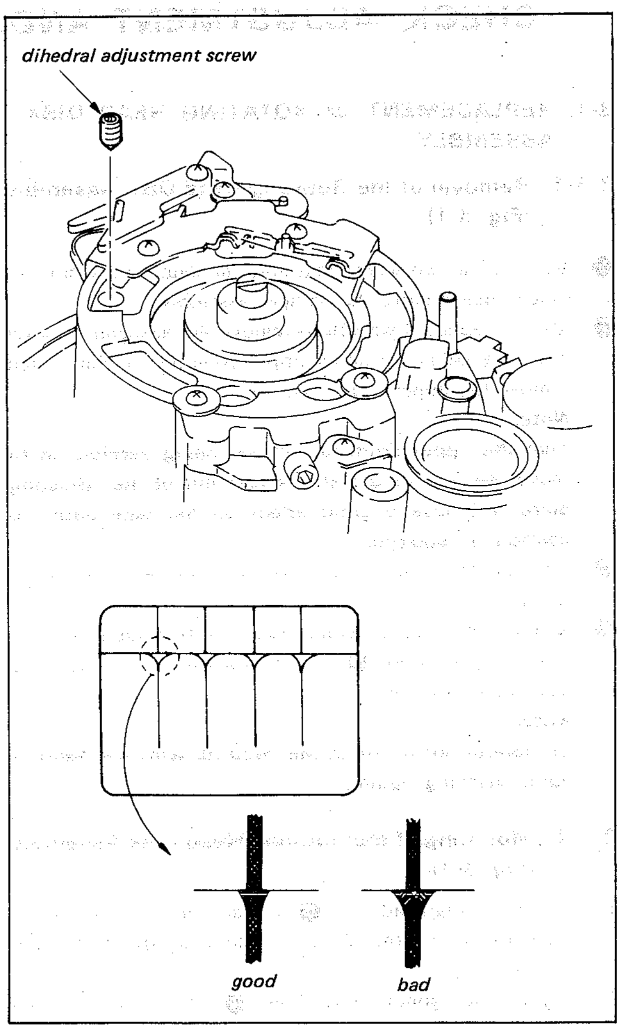


Fig. 3-3. Video head dihedral adjustment

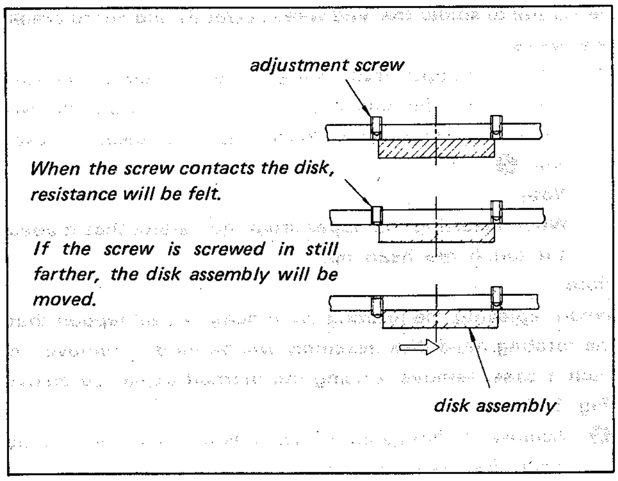

adjustment screw
When the screw contacts the disk, resistance will be felt.
If the screw is screwed in still farther, the disk assembly will be moved.
disk assembly

Fig. 3-4.

3-3. REPLACEMENT AND ADJUSTMENT OF THE DRUM ASSEMBLY

3-3-1. Replacement of the Drum Assembly

❶ Measure gap Ⓐ between adjusting plate 1 and the upper drum holder section, and record the measurement.

Note:
The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

❷ Measure gap Ⓑ between adjusting plate 2 and the upper drum holder section, and record the measurement.

Note:
The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

❸ Remove the screws shown in Fig. 3-5, then remove the tape guide ground plate and adjusting plates 1 and 2.

❹ Remove the 3 connectors from the rear of the chassis as shown in Fig. 3-6.

❺ Remove the 3 drum mounting screws from the rear of the chassis, then remove the main body of the drum assembly. After the replacement has been completed, adjust the drum path.

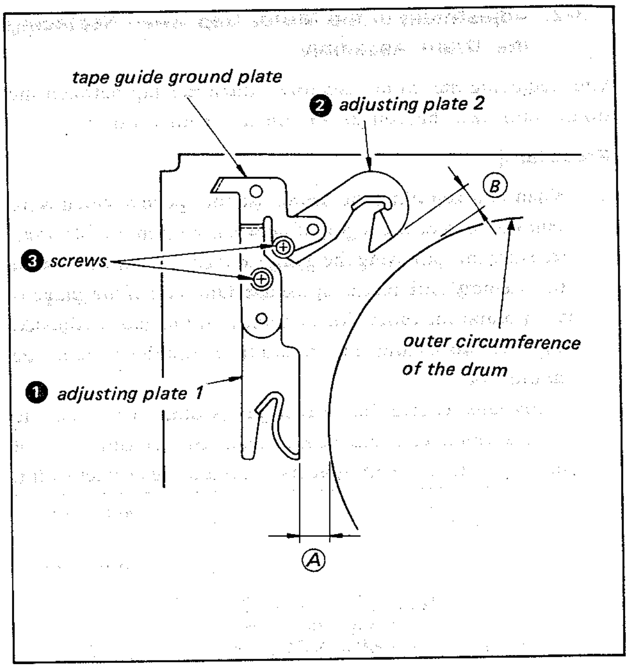

tape guide ground plate
❷ adjusting plate 2
Ⓑ
❸ screws
outer circumference of the drum
❶ adjusting plate 1
Ⓐ

Fig. 3-5. Measurement of the position of adjusting plates 1 and 2

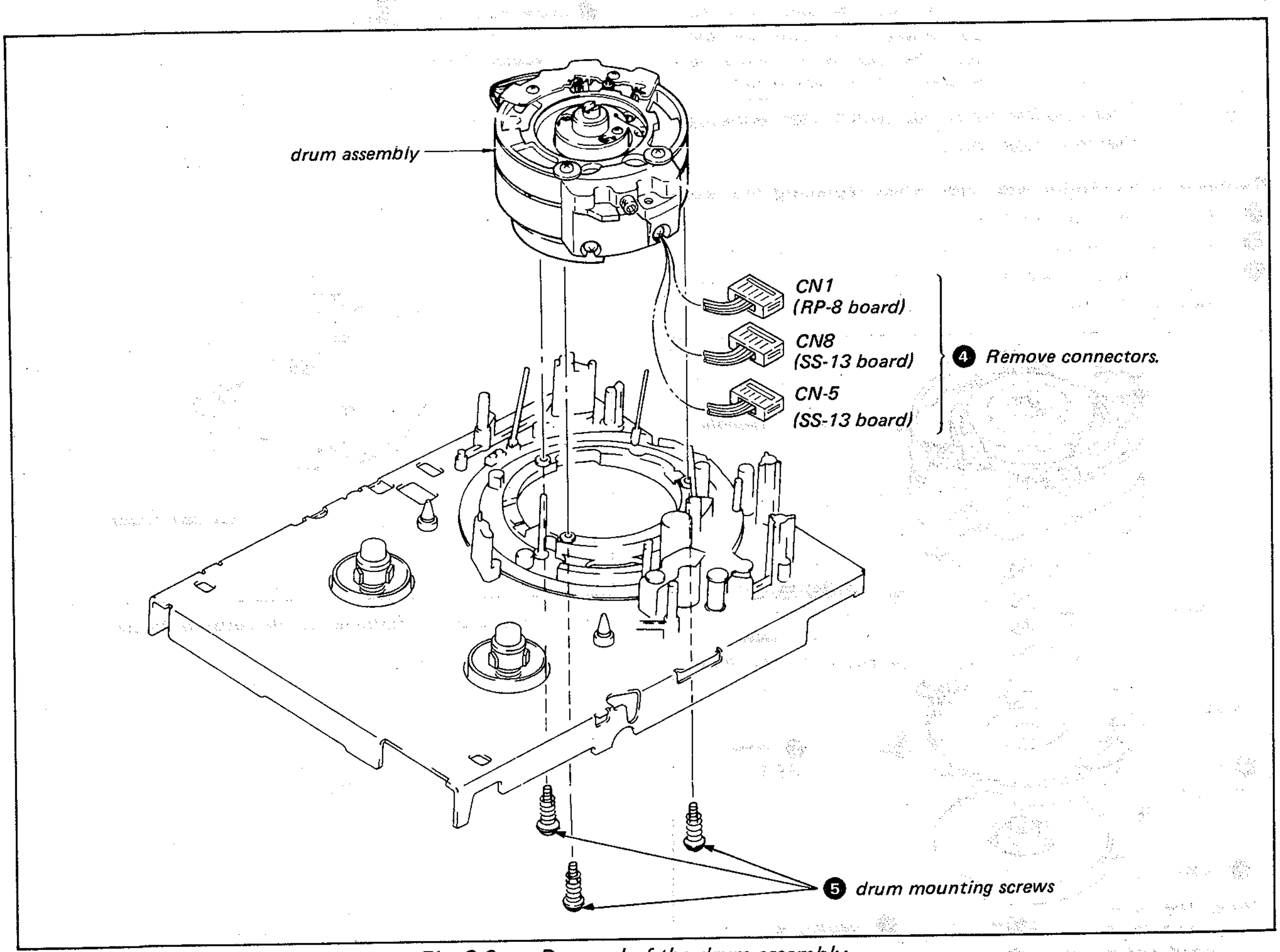

drum assembly
CN1 (RP-8 board)
CN8 (SS-13 board)
CN-5 (SS-13 board)
❹ Remove connectors.
❺ drum mounting screws

Fig. 3-6. Removal of the drum assembly

3-3-2. Adjustment of the Motor Gap when Replacing the Drum Assembly

After replacing the drum assembly, adjust the gap between the motor rotor and the coil to 0.3 mm to 0.6 mm (Fig. 3-7).

[Procedure]

1) When re-assembling the drum, use the spacers which were removed to produce a gap of between 0.3 mm and 0.6 mm. Measure the gap using the gauge that comes with the drum for assembly and maintenance use. One side of the gauge is 0.3 mm and the other side is 0.6 mm. If the gap is adjusted correctly, the 0.3 mm side should fit in and the 0.6 mm side should not.
2) If this fails to give the correct gap width, do not use the spacers which were removed; instead, use a combination of the 4 0.3 mm accessory spacers to obtain the correct width.

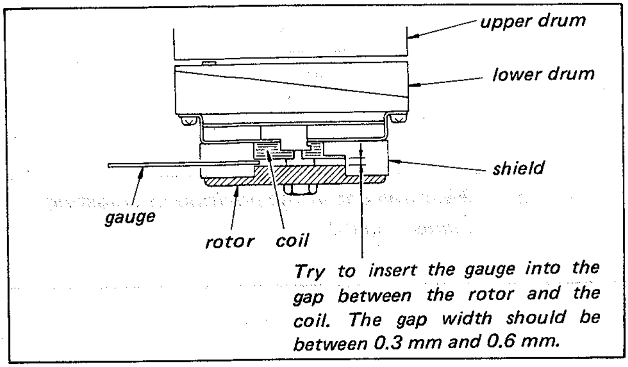

upper drum
lower drum
shield
gauge
rotor
coil
Try to insert the gauge into the gap between the rotor and the coil. The gap width should be between 0.3 mm and 0.6 mm.

Fig. 3-7. Checking the motor gap width after replacing the drum assembly

Removal of the stator and rotor when replacing the drum

❶ Remove the nut and washer.
❷ Remove the rotor from the stator.
❸ Remove the 2 screws, then remove the stator from the main body of the drum.

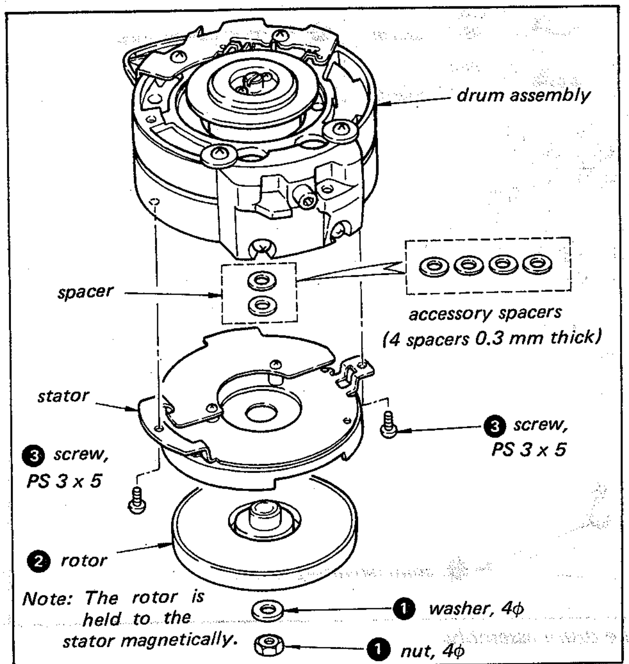

drum assembly
spacer
accessory spacers
(4 spacers 0.3 mm thick)
stator
❸ screw, PS 3 x 5
❸ screw, PS 3 x 5
❷ rotor
Note: The rotor is held to the stator magnetically.
❶ washer, 4ϕ
❶ nut, 4ϕ

Fig. 3-8. Removal of the stator and rotor when replacing the drum

3-4. REPLACEMENT OF THE CAPSTAN MOTOR

3-4-1. Removal of the Capstan Motor (Fig. 3-9)

- Remove screws ❶, ❷ and ❸, then remove the capstan motor from the rear of the mechanical chassis.

  Note:
  After replacing the capstan motor, adjust the tape path as explained in section 4-3.

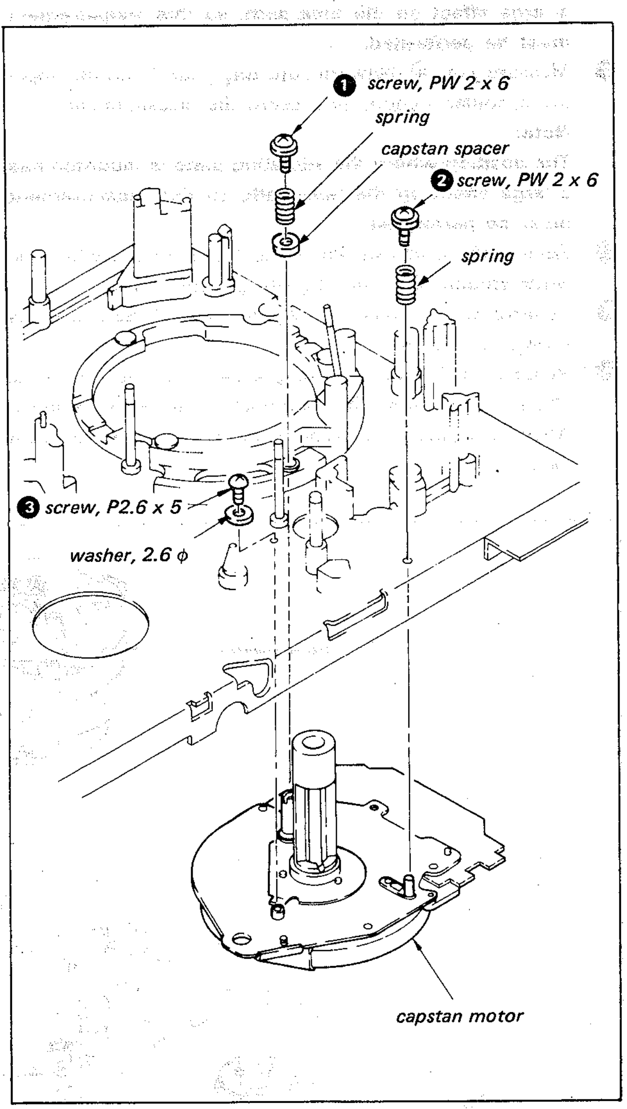

❶ screw, PW 2 x 6
spring
capstan spacer
❷ screw, PW 2 x 6
spring
❸ screw, P2.6 x 5
washer, 2.6 ϕ
capstan motor

Fig. 3-9 Removal of the capstan motor

3-5. REMOVAL OF THE S COIL SENSOR (Fig. 3-10)

❶ Remove the spring.
❷ Remove the claw in the direction of arrow Ⓐ, then pull the S coil sensor out.
❸ Unplug the connector from CN407 on SS-13 board.

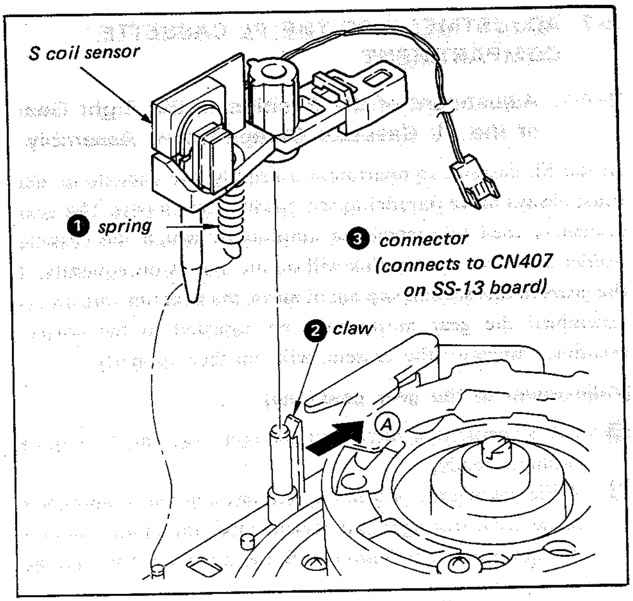

S coil sensor
❶ spring
❸ connector (connects to CN407 on SS-13 board)
❷ claw
Ⓐ

Fig. 3-10. Removal of the S coil sensor

3-6. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 3-11)

❶ Pull the internal gear flange out.
❷ Remove the synchro belt.
❸ Remove the 5 screws (BVTT2.6×6).
❹ Pull connector CN417 (white) out.
❺ Remove the FL cassette compartment section in the direction of arrow Ⓐ.

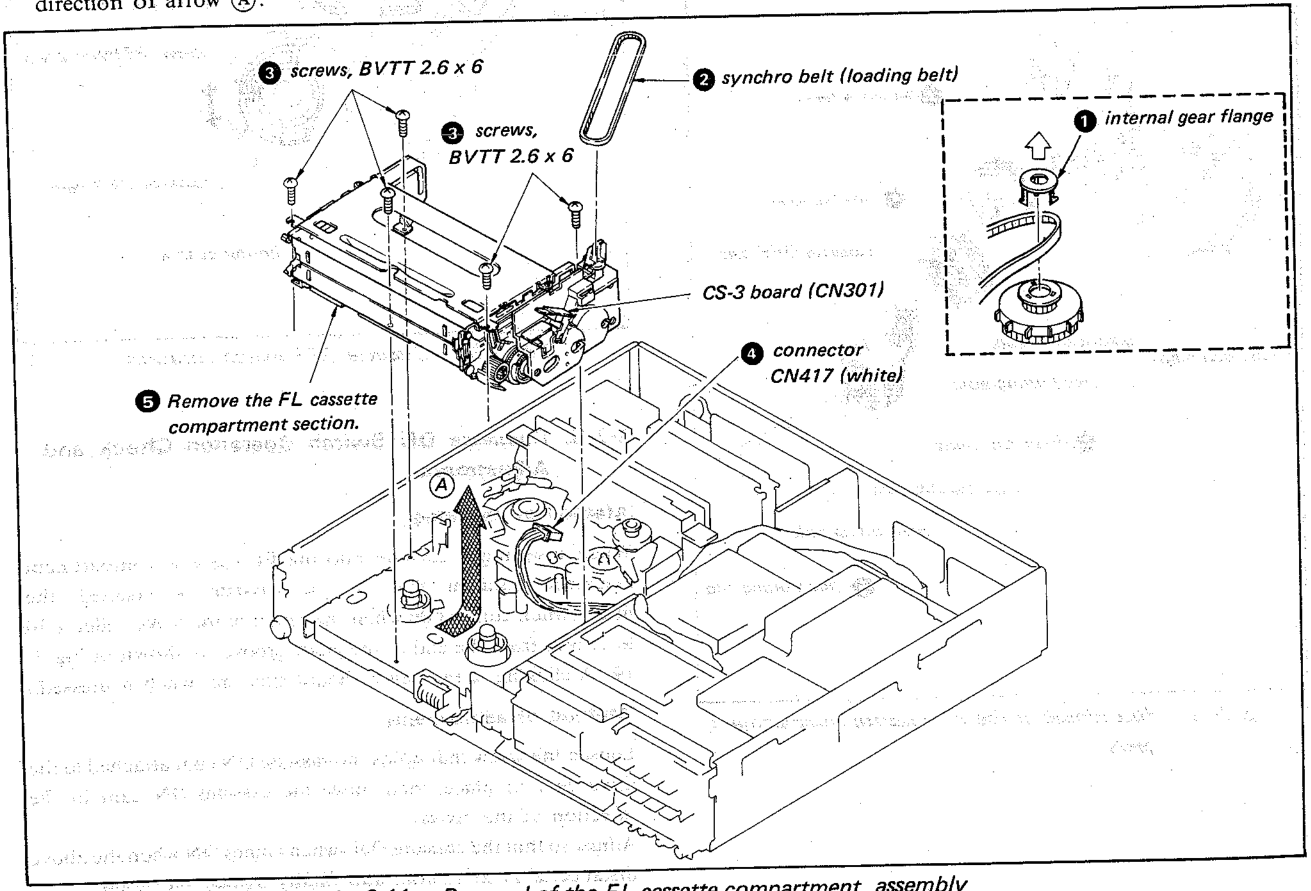

❸ screws, BVTT 2.6 x 6
❸ screws, BVTT 2.6 x 6
❷ synchro belt (loading belt)
❶ internal gear flange
CS-3 board (CN301)
❹ connector CN417 (white)
❺ Remove the FL cassette compartment section.
Ⓐ

Fig. 3-11. Removal of the FL cassette compartment assembly

3-7. ADJUSTMENT OF THE FL CASSETTE COMPARTMENT

3-7-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder must always move parallel to the mechanical chassis. The gear system is used to control the amount by which the cassette holder advances so that this will be the case. Consequently, if the gears in this section slip out of mesh, the next time the unit is assembled the gear mesh must be adjusted to the correct position; otherwise the cassette will not feed properly.

[Adjustment of the gear positions]

1. Get a positioning rod about 200 mm long and 1.5 mm in diameter ready.
2. While passing the positioning rod through the combination of the drive arm right and cassette ON cam, fit the latter on the right side plate. Similarly, fit the drive arm left onto the left side plate.
3. Similarly, while passing the positioning rod through the worm wheel, fit the latter onto the right side plate.
4. Similarly, while passing the positioning rod through the combination of the limiter gear and cassette OFF cam, fit the latter onto the right side plate.

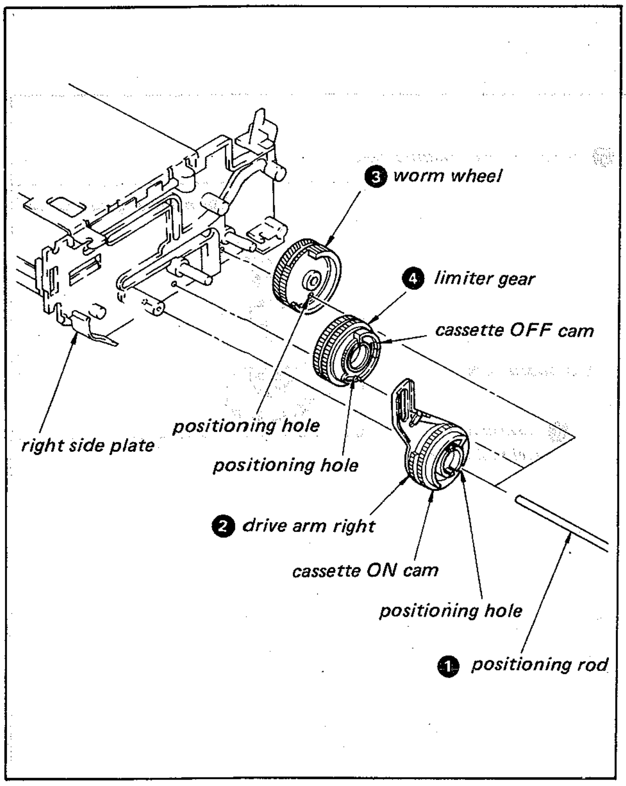


Fig. 3-12. Positioning of the FL cassette compartment gears

3-7-2. Cassette OFF Switch Operation Check and Adjustment

[Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the microswitch comes ON when the center of the drive roller is 0 to 5 mm from the end of the guide groove, as shown in Fig. 3-13. (The switch lever will be restored to tis original position, making a clicking sound.)

[Method of adjustment]

Loosen the screw that holds the cassette OFF cam attached to limiter gear A in place, move the cassette OFF cam in the direction of the arrow, adjust so that the cassette OFF switch comes ON when the above distance is 0 to 5 mm, and finally tighten the screw.

* When the cassette ON switch and cassette OFF switch operate, the threading motor comes ON.

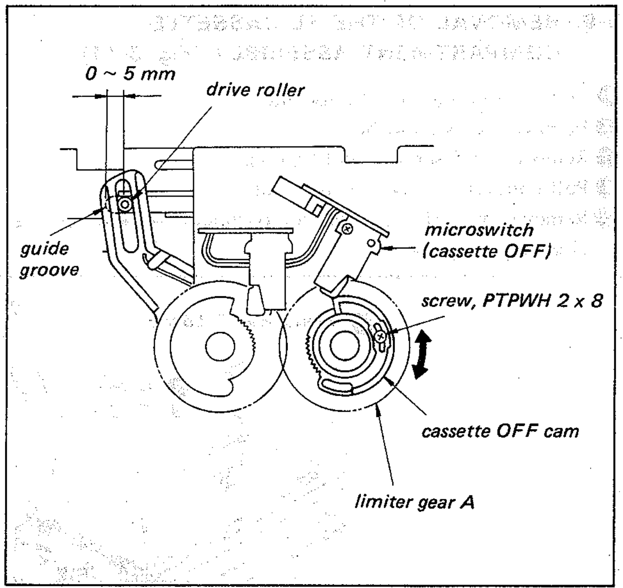


Fig. 3-13. Cassette OFF switch opration

3-7-3. Cassette ON Switch Operation Check and Adjustment

[Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the microswitch comes ON when the center of the drive roller is 10 to 15 mm from the end of the guide groove, as shown in Fig. 3-14. (A clicking sound can be heard after the switch is pressed.)

[Method of adjustment]

Loosen the screw that holds the cassette ON cam attached to the drive gear in place, then move the cassette ON cam in the direction of the arrow.

Adjust so that the cassette ON switch comes ON when the above distance is 10 to 15 mm, and finally tighten the screw.

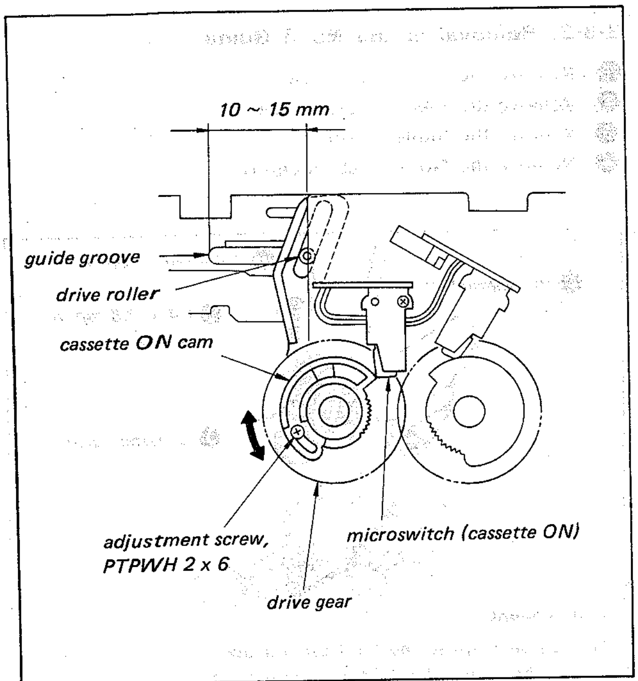

10 ~ 15 mm
guide groove
drive roller
cassette ON cam
adjustment screw, PTPWH 2 x 6
microswitch (cassette ON)
drive gear

Fig. 3-14. Cassette ON switch operation check and adjustment

3-7-4. Checking and Adjustment of the Cassette Door Assembly

[Method of checking]

With the door opening and closing arm returned all the way in the direction of arrow Ⓐ, check to make sure that the upper and lower doors are vertical.

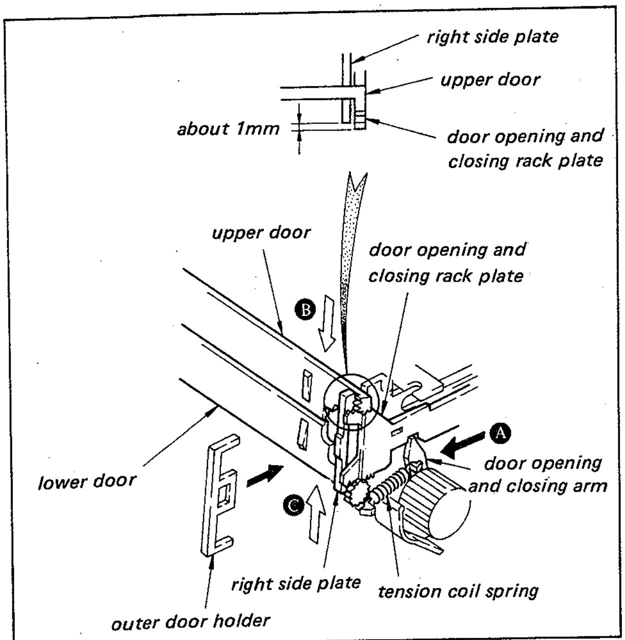

right side plate
upper door
about 1mm
door opening and closing rack plate
upper door
door opening and closing rack plate
Ⓑ
Ⓐ
door opening and closing arm
lower door
Ⓒ
right side plate
tension coil spring
outer door holder

Fig. 3-15. Adjustment of the position of the cassette door assembly

[Method of adjustment]

Check to make sure that the door opening and closing rack plate has returned all the way. Then, with the tip of the door opening and closing rack plate and the tip of the right side plate about 1 mm apart, close the upper and lower doors together in the directions of arrows Ⓑ and Ⓒ so that they are vertical, and mesh the gears. Fit the outer door holder onto the right side plate, and fix the upper and lower doors in place.

3-7-5. Mounting the FL Cassette Compartment Assembly (Fig. 3-16)

❶ Hook the two claws of the FL cassette compartment assembly onto the mechanical chassis, then place the compartment in the specified position on the chassis.

❷ Loosely tighten the 5 mounting screws of the FL cassette compartment assembly. Move the FL cassette compartment assembly forward and backward with respect to the mechanical chassis, set it in the correct position, then tighten the mounting screws all the way.

❸ Connect the synchro belt (loading belt) between the threading motor and the worm gear, then hold it in place with the internal gear flange.

❹ Press the tension roller arm in the direction of the arrow to adjust the tension of the synchro belt (loading belt), then fix it in place with the arm fixing screw.

❺ Insert the harness sticking out from the main body into connector CN301 on CS-3 board.

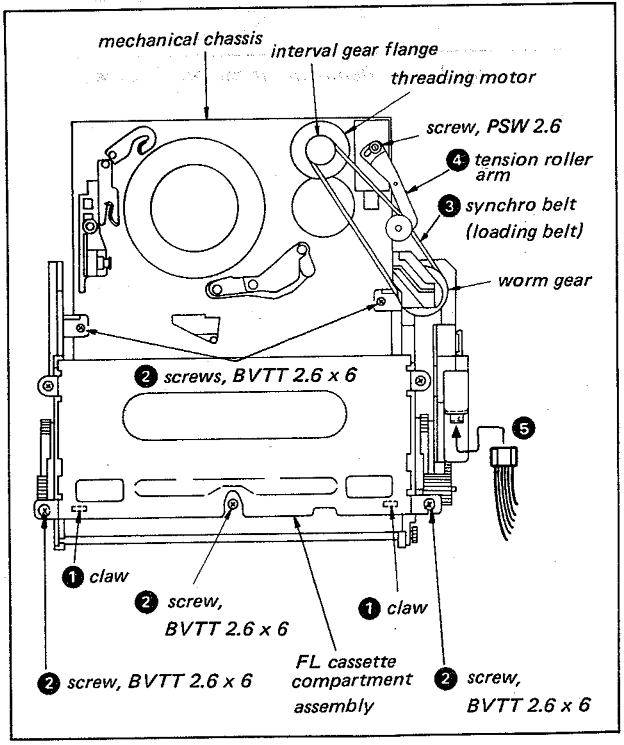
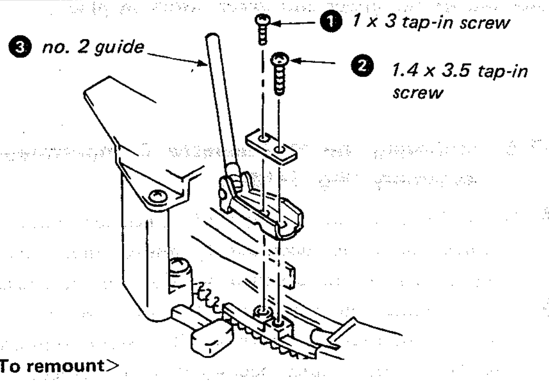

mechanical chassis
interval gear flange
threading motor
screw, PSW 2.6
❹ tension roller arm
❸ synchro belt (loading belt)
worm gear
❷ screws, BVTT 2.6 x 6
❺
❶ claw
❷ screw, BVTT 2.6 x 6
❶ claw
❷ screw, BVTT 2.6 x 6
FL cassette compartment assembly
❷ screw, BVTT 2.6 x 6

Fig. 3-16. Mounting the FL cassette compartment assembly

3-8. REMOVAL OF THE No. 2 AND No. 3 GUIDES

3-8-1. Removal of the No. 2 Guide

❶ Remove the 1×3 tap-in screw.
❷ Remove the 1.4×3.5 tap-in screw.
❸ Remove the No. 2 guide assembly.


❶ 1 x 3 tap-in screw
❸ no. 2 guide
❷ 1.4 x 3.5 tap-in screw

<To remount>

1) *Loosely tighten the 1 x 3 tap-in screw.*
2) *Tighten the 1.4 x 3.5 tap-in screw all the way.*
3) *Adjust the 1 x 3 tap-in screw until the height is 30 mm. After adjustment, lock the screw.*
   Note: The no. 3 guide is up all the way.

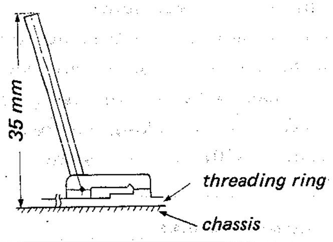
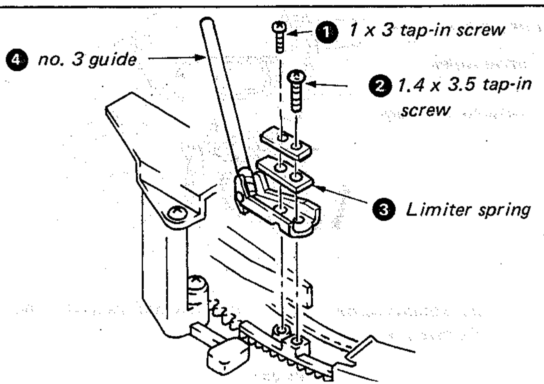

35 mm
threading ring
chassis

Fig. 3-17. Removal of the no. 2 guide

3-8-2. Removal of the No. 3 Guide

❶ Remove the 1×3 tap-in screw.
❷ Remove the 1.4×3.5 tap-in screw.
❸ Remove the limiter spring.
❹ Remove the No. 3 guide assembly.


❶ 1 x 3 tap-in screw
❹ no. 3 guide
❷ 1.4 x 3.5 tap-in screw
❸ Limiter spring

<To remount>

1) *Loosely tighten the 1 x 3 tap-in screw.*
2) *Tighten the 1.4 x 3.5 tap-in screw all the way.*
3) *Adjust the 1 x 3 tap-in screw so that the height is 35 mm. After adjustment, lock the screw.*
   Note: The no. 2 guide is up all the way.

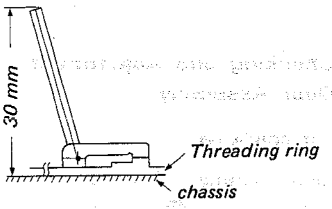

30 mm
Threading ring
chassis

Fig. 3-18. Removal of the no. 3 guide

3-9. REPLACEMENT AND ADJUSTMENT OF THE S THREADING RING

3-9-1. Preparation to Remove the S Threading Ring Removal of the ACE Assembly, FE Head and Threading Motor (Fig. 3-19)

❶ Remove the cross-recessed head screw.
❷ Remove the No. 6 guide nut.
❸ Remove the No. 6 washer.
❹ Remove the No. 6 guide spacer.
❺ Remove the compression coil spring.
❻ Remove the 2 guide adjustment nuts, then remove the ACE assembly and the FE head.

Note:
Since the ACE assembly and the FE head are connected by a lead wire, be careful when removing them. It is not necessary to remove the compression coil spring below the ACE assembly, but be careful not to use it.

❼ Remove the 2 PSW2.6 screws, then remove the stopper arm section.
❽ Remove the 2 screws, then remove the threading motor assembly by pulling it up and out.

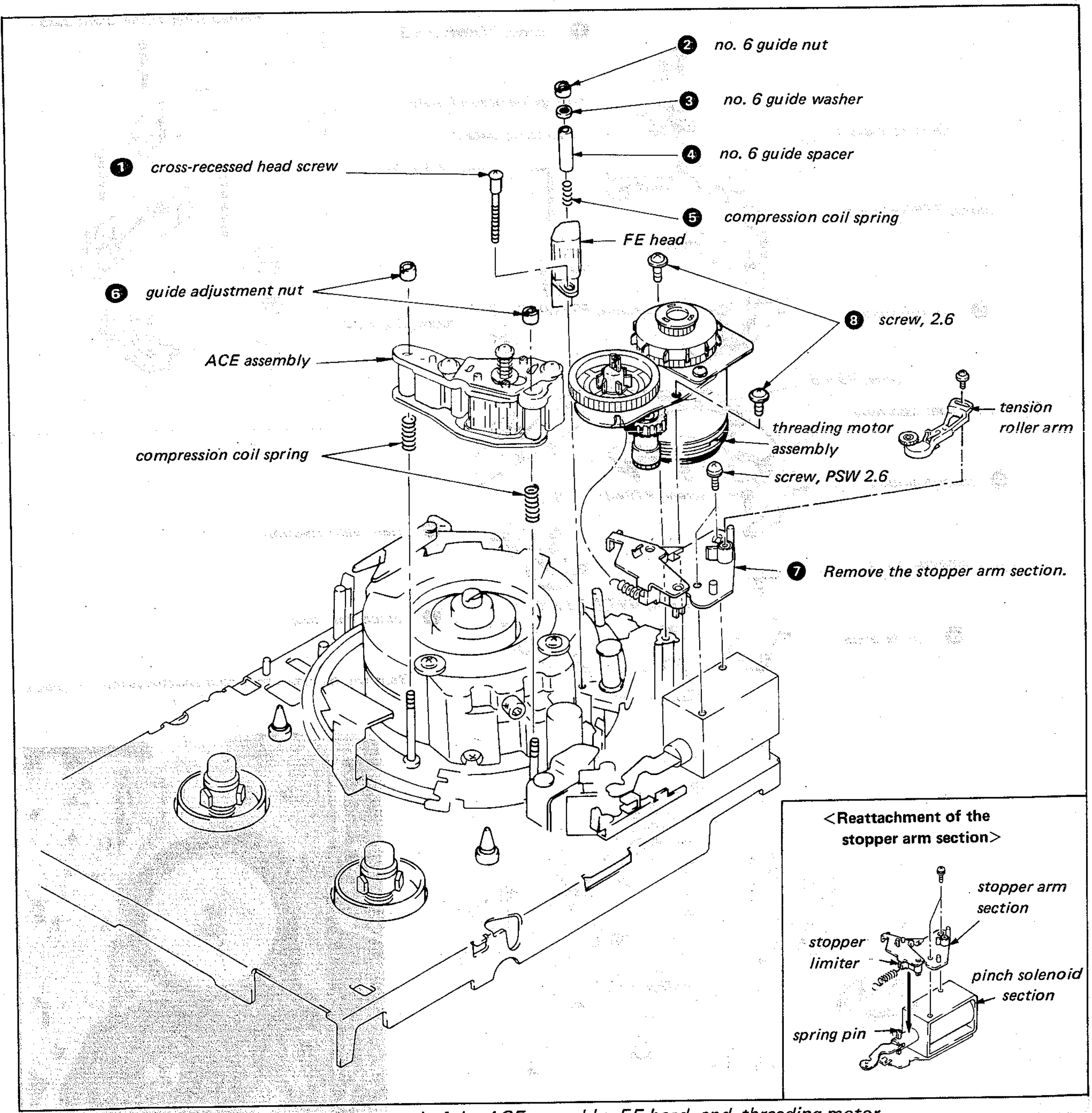

❷ no. 6 guide nut
❸ no. 6 guide washer
❹ no. 6 guide spacer
❶ cross-recessed head screw
❺ compression coil spring
FE head
❻ guide adjustment nut
❽ screw, 2.6
ACE assembly
tension roller arm
threading motor assembly
compression coil spring
screw, PSW 2.6
❼ Remove the stopper arm section.
<Reattachment of the stopper arm section>
stopper arm section
stopper limiter
pinch solenoid section
spring pin

Fig. 3-19. Removal of the ACE assembly, FE head and threading motor.

Removal of Miscellaneous Parts (Fig. 3-20)

Proceeding in the same manner as in replacement of the drum assembly, measure the width of the gap between the upper drum and the adjusting plates (Fig. 3-5).

❶ Remove the screw, then remove the tape guide ground plate and adjusting plates 1 and 2.

❷ Remove the two screws, then remove the tape holder assembly.

❸ Remove the screw, then remove the guide plate.

❹ Remove the 2 PTPWH2×8 screws and the 2.6×24 screw, then remove shuttle guide II.

❺ Remove the 3 PTPWH2×8 screws and the 2.6×24 screw. Then remove the 2 claws holding shuttle guide I in place, and finally remove shuttle guide I.

❻ Remove the slant base assembly.

❼ Remove the BVTT2.6×6 screw, then remove the pinch liner link.

Note:

After removing the guide plate, do not thread or unthread a tape with the shuttle guide mounted.

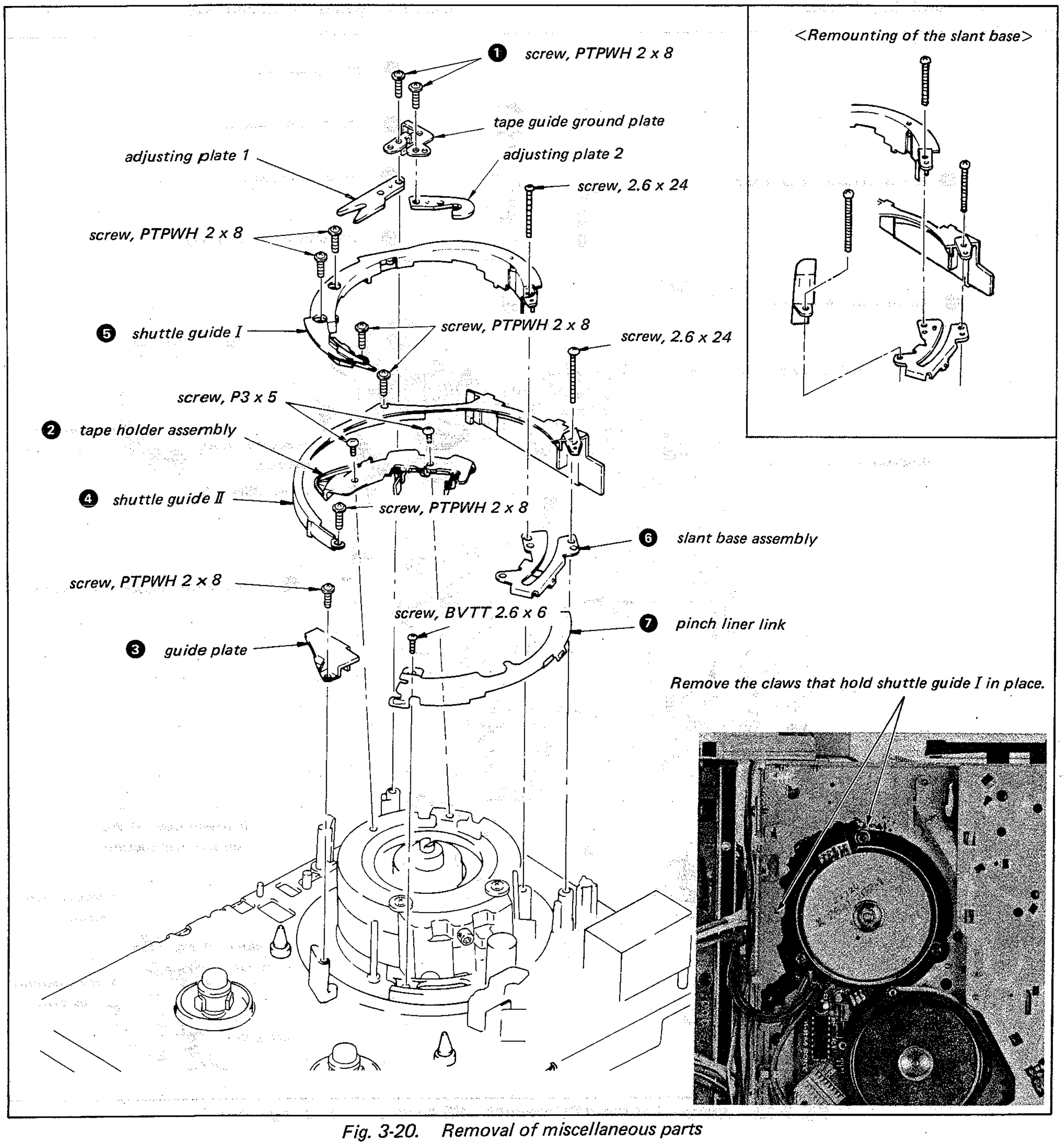

❶ screw, PTPWH 2 x 8
tape guide ground plate
adjusting plate 1
adjusting plate 2
screw, 2.6 x 24
screw, PTPWH 2 x 8
❺ shuttle guide I
screw, PTPWH 2 x 8
screw, 2.6 x 24
screw, P3 x 5
❷ tape holder assembly
❹ shuttle guide II
screw, PTPWH 2 x 8
❻ slant base assembly
screw, PTPWH 2 x 8
screw, BVTT 2.6 x 6
❼ pinch liner link
❸ guide plate
<Remounting of the slant base>
Remove the claws that hold shuttle guide I in place.

Fig. 3-20. Removal of miscellaneous parts

3-9-2. Removal of the S Threading Ring (Fig. 3-21)

❶ Remove the tension coil spring from the lock arm assembly (refer to Fig. 3-26 in section 3-11-1).

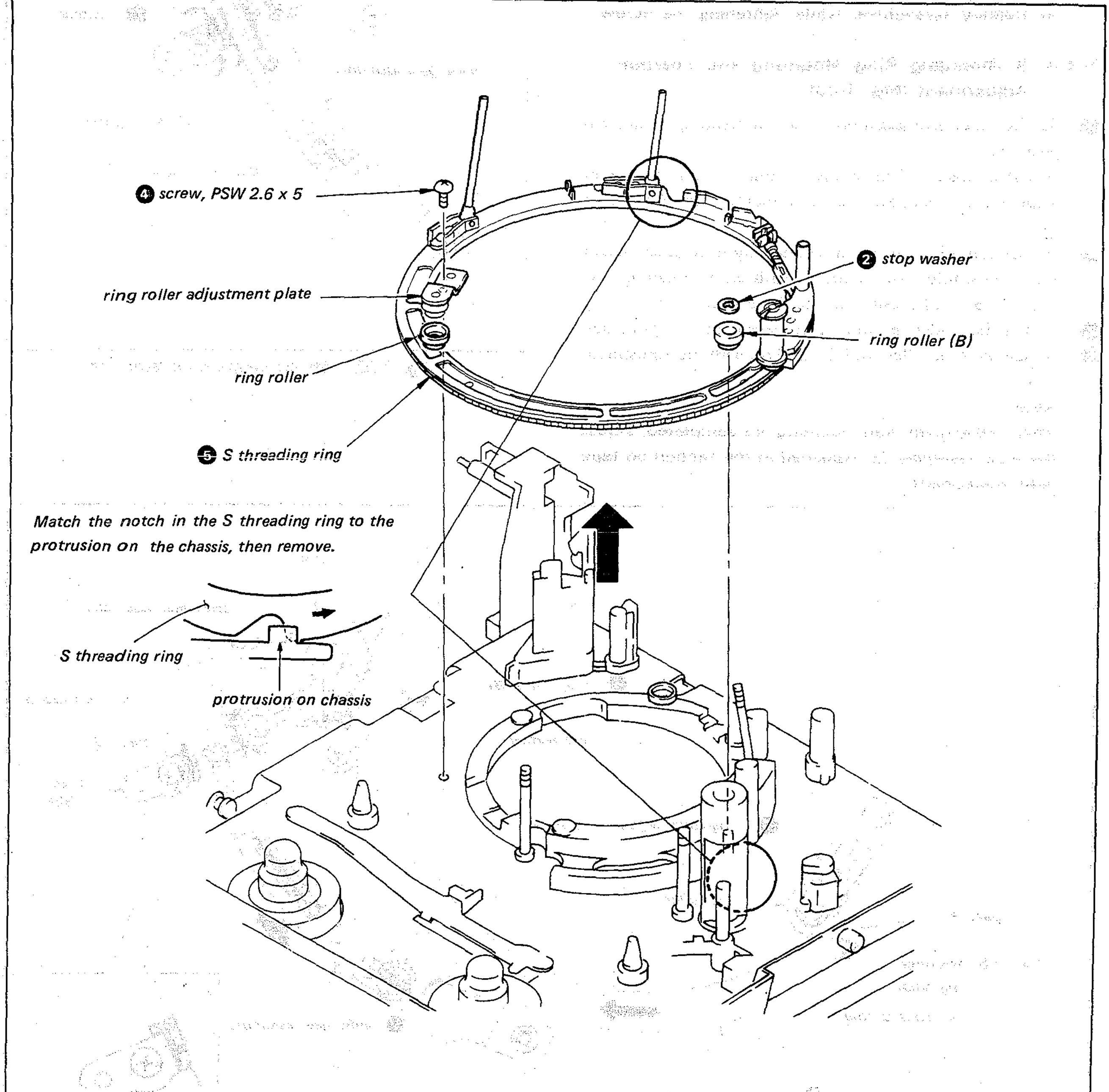
❷ Turn the stop washer and remove the ring roller (B).

❸ Remove the group of parts in the unthreading end switch (for instructions on assembly and disassembly, refer to section 3-11-2 and Fig. 3-30).

❹ Remove the screw, then remove the ring roller adjustment plate.

❺ Remove the S threading ring.

Note:
Once a stop washer has been removed, do not use it again.


❹ screw, PSW 2.6 x 5
❷ stop washer
ring roller adjustment plate
ring roller (B)
ring roller
❺ S threading ring
S threading ring
protrusion on chassis

Match the notch in the S threading ring to the protrusion on the chassis, then remove.

Fig. 3-21. Removal of the S threading ring

3-9-3. Slider-Stopper Mounting Check (Fig. 3-22)

❶ Confirm that the parts of the drive gear are fixed in place.

❷ Loosen the screw, insert a spacer of thickness 0.2 mm between the slider gear assembly and the slider stopper, and tighten the screw while pressing down in the direction of both arrows Ⓐ and Ⓑ.

Note:

It is absolutely necessary to press down in the direction of arrow (A) in order to eliminate play. When the screw is tightened, the slide stopper tends to turn in the direction of arrow (a), so it should be held in place with an ordinary screwdriver while tightening the screw.

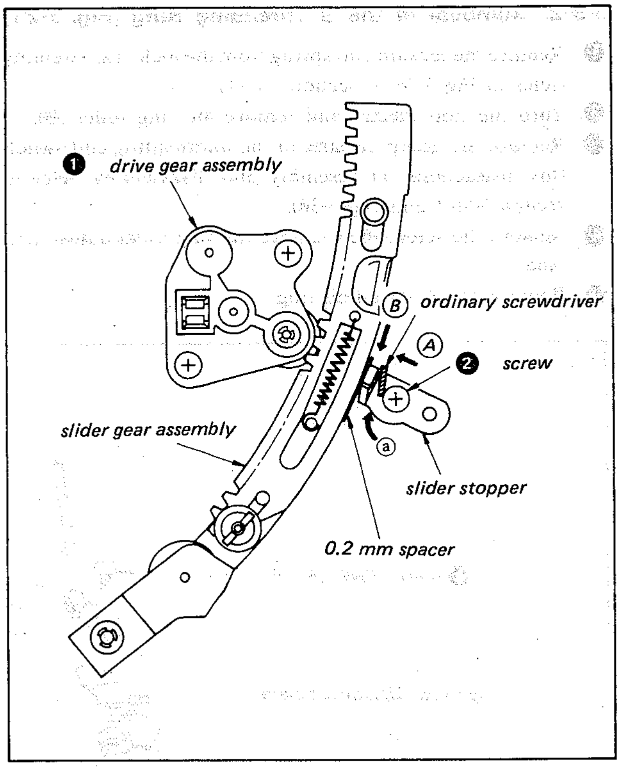

❶ drive gear assembly
Ⓑ ordinary screwdriver
Ⓐ
❷ screw
slider gear assembly
ⓐ
slider stopper
0.2 mm spacer

Fig. 3-22. Mounting the slider-stopper

3-9-4. S Threading Ring Mounting and Position Adjustment (Fig. 3-23)

❶ Set the slider gear assembly in the unthreading completed position.
(Insert a spacer of thickness 0.5 mm between the slider stopper and slider gear, and set so that it is up against part Ⓐ.)

❷ In this condition, fit the threading ring into place, match the chassis hole (3ϕ) of part Ⓑ with the S threading ring hole (1.5ϕ), and mesh with the drive gear teeth.

❸ Attach ring roller (B) and fix in place with a stop washer.

❹ Attach the ring roller, and fix in place with the adjustment plate.

Note:

After replacement and mounting are completed, adjust the ACE assembly as explained in the section on tape path adjustment.

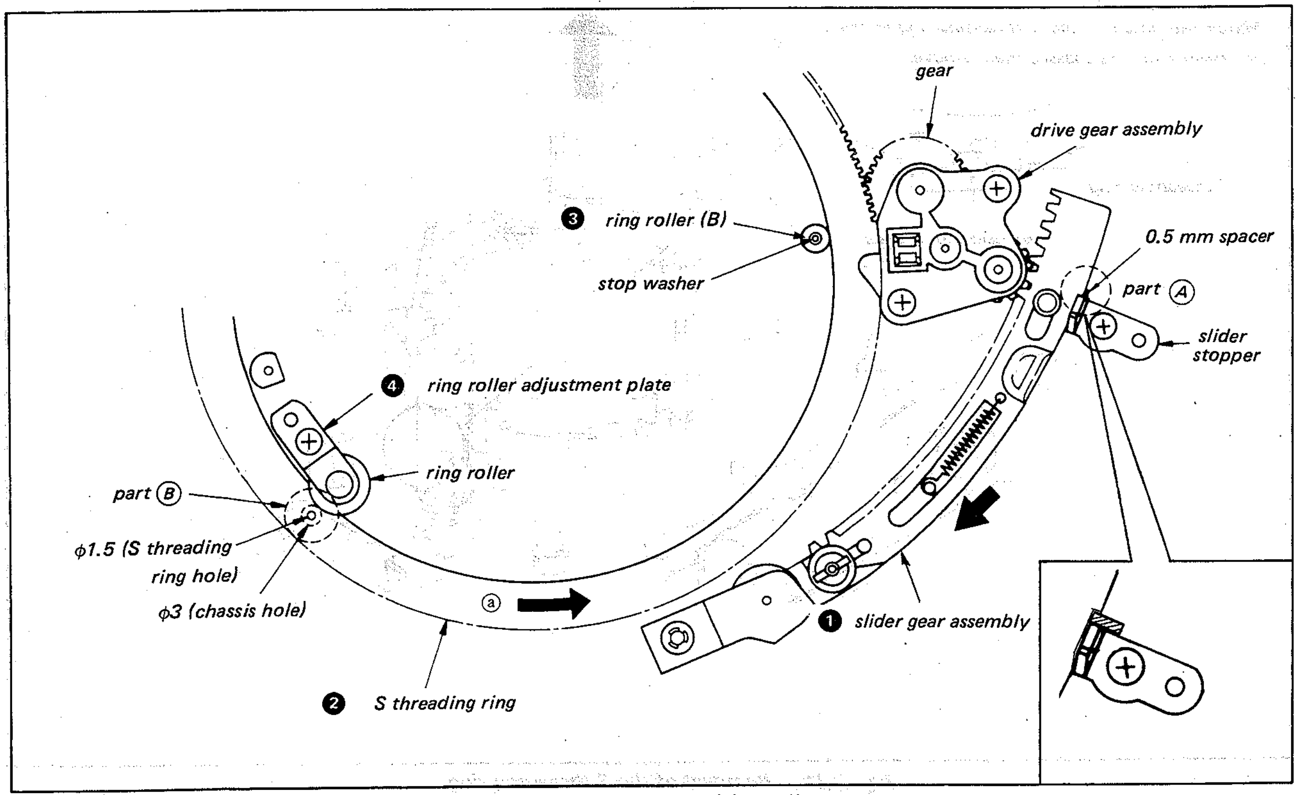

gear
drive gear assembly
❸ ring roller (B)
stop washer
0.5 mm spacer
part Ⓐ
slider stopper
❹ ring roller adjustment plate
ring roller
part Ⓑ
φ1.5 (S threading ring hole)
φ3 (chassis hole)
ⓐ
❶ slider gear assembly
❷ S threading ring

Fig. 3-23. S threading ring position adjustment

3-10. PINCH SNAP-FIT LIMITER GAP CHECK AND ADJUSTMENT

[Method of checking]

1) Set in the threading completed condition.
2) With the plunger pushed in all the way, confirm that the thickness of the pinch snap-fit limiter gap is 0.4 mm to 0.6 mm. If it is not, adjust as explained under [method of adjustment] below.

[Method of adjustment]

❶ With the pinch solenoid in the absorbed condition (when the plunger is pushed in all the way), loosen the adjustment screw.

❷ Press the pinch limiter adjustment plate in the direction of arrow ⓐ with an ordinary screwdriver, as in section Ⓐ in the diagram, and adjust until the thickness of the gap in 0.4 mm to 0.6 mm.
Tighten the adjustment screw and then lock it to fix everything in place.

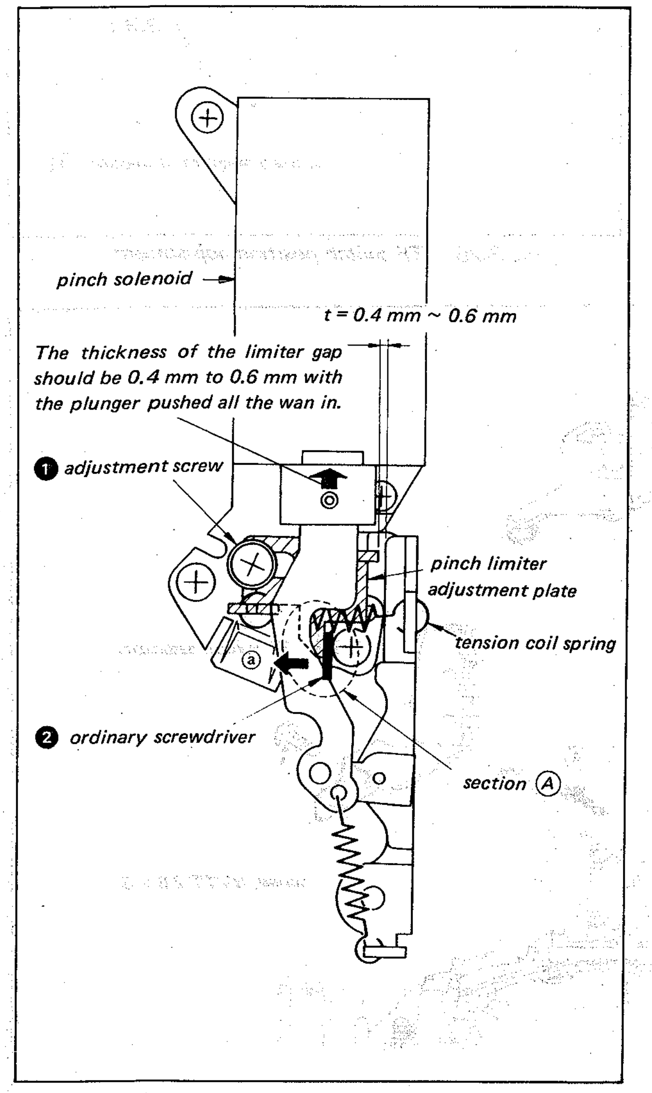

pinch solenoid
t = 0.4 mm ~ 0.6 mm
The thickness of the limiter gap should be 0.4 mm to 0.6 mm with the plunger pushed all the wan in.
❶ adjustment screw
pinch limiter adjustment plate
tension coil spring
ⓐ
❷ ordinary screwdriver
section Ⓐ

Fig. 3-24. Pinch snap-fit limiter gap adjustment plate

3-11. MICROSWITCH POSITION CHECK AND ADJUSTMENT

3-11-1. Threading End Switch (TE Switch) Position Check and Adjustment

[Method of checking]

Turn the S threading ring manually. Check to make sure that, when the lock roller moves from above the straight line part of the notch in the ring (Fig. 3-25 section Ⓐ) to 2/3 of the way down it and back, the TE switch turns ON and OFF. This can be confirmed from the clicking sound.
If the lock roller has to move outside of this range before the switch will turn ON and OFF, adjust as explained below.

[Method of adjustment]

1) Set the lock roller between the top of the notch in the S threading ring and 2/3 of the way down it, turn the cam shaft in the direction of the arrow with an ordinary screwdriver and, when the switch turns ON (with a clicking sound), fix the cam shaft in place.
2) When the adjustment is completed, repeat the check as described under [method of checking].

[Removal]

❶ Remove the tension coil spring that is attached to the lock arm assembly.
❷ Remove the screw, then remove the TE switch assembly.
❸ Press the claws holding the main chassis assembly in place in the direction of arrow Ⓐ to release the lock, then remove the lock arm assembly.

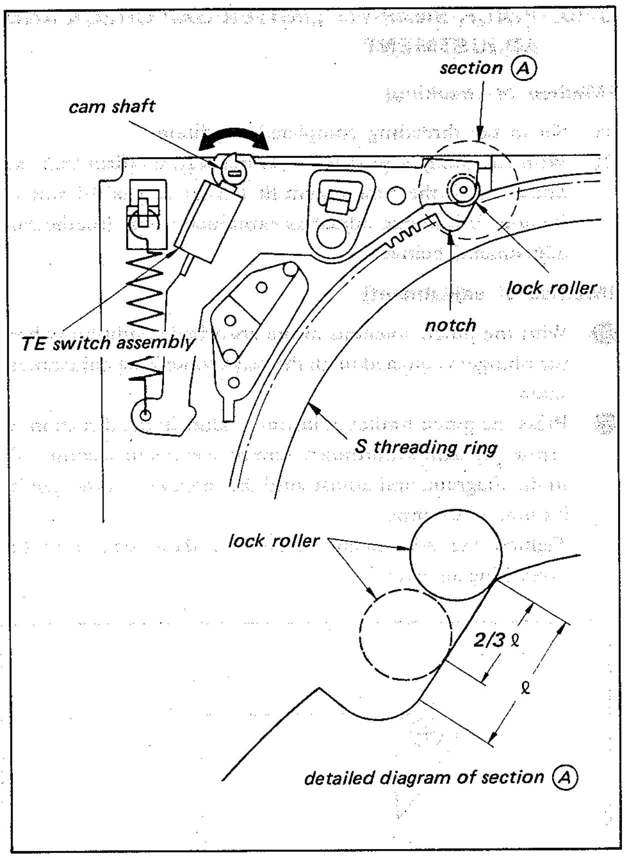

section Ⓐ
cam shaft
lock roller
notch
TE switch assembly
S threading ring
lock roller
2/3 ℓ
ℓ
detailed diagram of section Ⓐ

Fig. 3-25. TE switch position adjustment

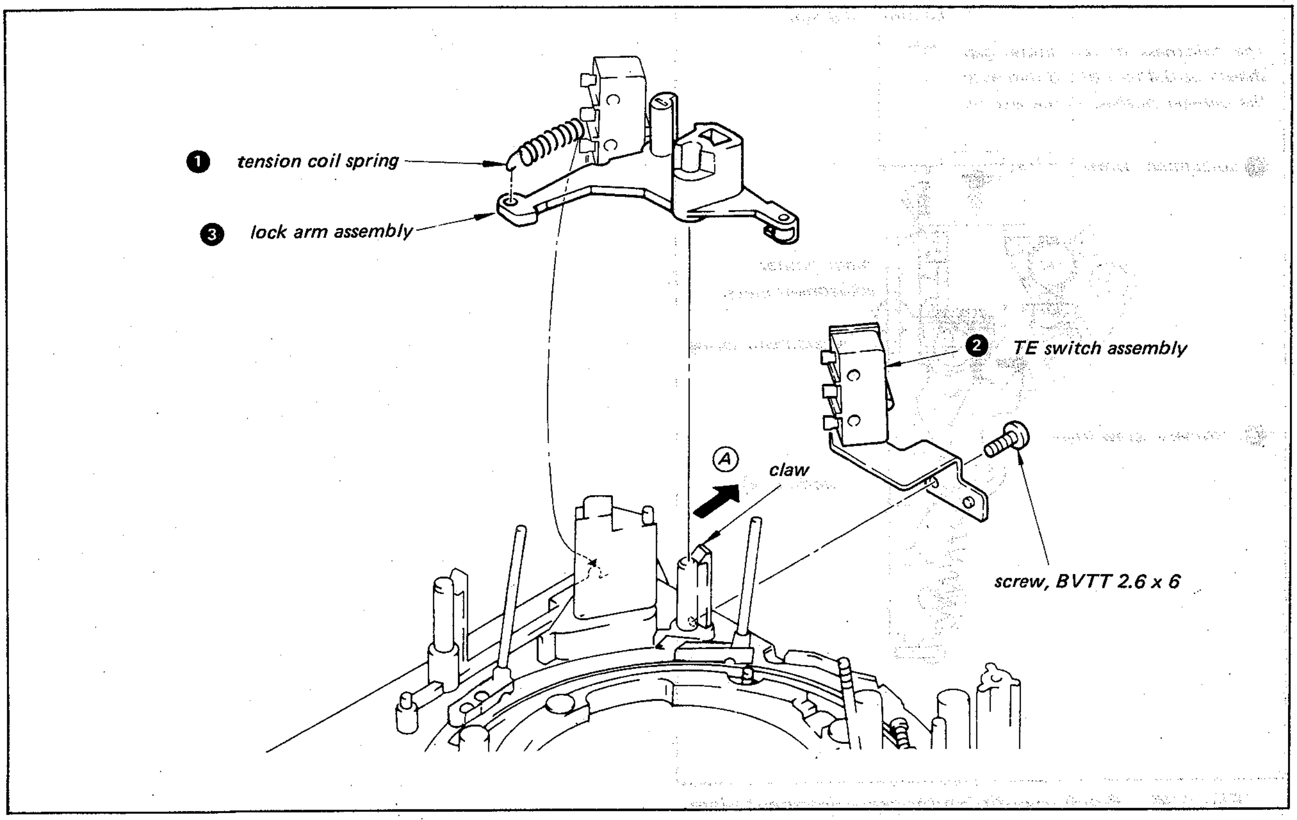

❶ tension coil spring
❸ lock arm assembly
❷ TE switch assembly
Ⓐ
claw
screw, BVTT 2.6 x 6

Fig. 3-26. Removal of the TE switch assembly and lock arm assembly

3-11-2. Unthreading End Switch (UTE Switch) Position Check and Adjustment

[Method of checking]

Turn the S threading ring manually until the UTE switch roller of the UTE switch arm assembly drops into the UTE switch arm groove. Confirm that when a ϕ1.2 pin is inserted into section Ⓐ in Fig. 3-27, the switch comes ON, and that when a ϕ0.6 pin is inserted the switch does not come ON.

[Method of adjustment]

1) If the switch fails to come ON when a ϕ1.2 pin is inserted, loosen small screw ❶ and adjust by turning a little at a time in the direction of arrow Ⓑ.
2) If the switch comes ON when a ϕ0.6 pin is inserted, it is possible that the actuator is bent as shown Fig. 3-28. Check it and straighten it out if necessary.

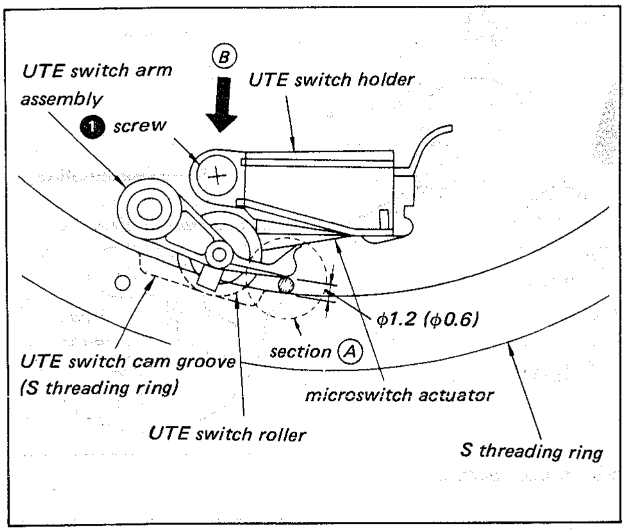

UTE switch arm assembly
Ⓑ
UTE switch holder
❶ screw
ϕ1.2 (ϕ0.6)
section Ⓐ
UTE switch cam groove (S threading ring)
microswitch actuator
UTE switch roller
S threading ring

Fig. 3-27. UTE switch position adjustment

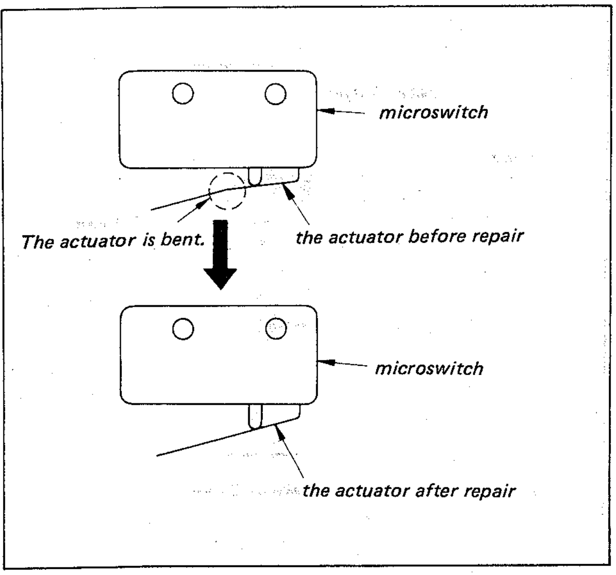

microswitch
The actuator is bent.
the actuator before repair
microswitch
the actuator after repair

Fig. 3-28. Repair of the actuator

Note:

The ϕ1.2 and ϕ0.6 pins must be inserted in the right place, as shown in Fig. 3-29 (as shown in Fig. 3-29, depending on where the pin is inserted, because of the structure of the assembly even if it enters at 1.2 mm the gap can be less than 1.2 mm farther in).

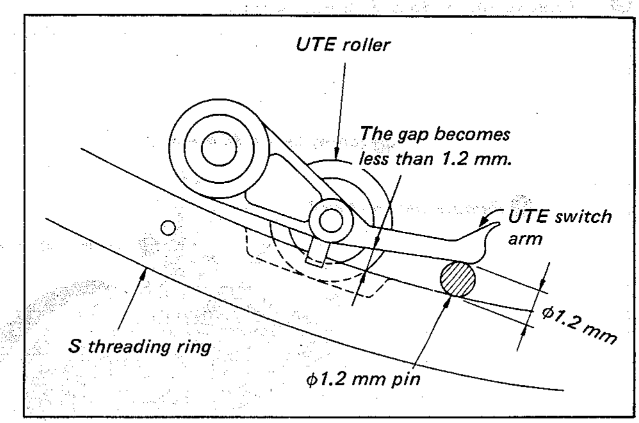

UTE roller
The gap becomes less than 1.2 mm.
UTE switch arm
ϕ1.2 mm
S threading ring
ϕ1.2 mm pin

Fig. 3-29. Position of the pin when checking

[How to remove]

❶ Remove the screw, as shown in Fig. 3-30.
❷ Remove the claw of the switch from the chassis, and then remove the main body of the switch while holding the actuator in the ON position.

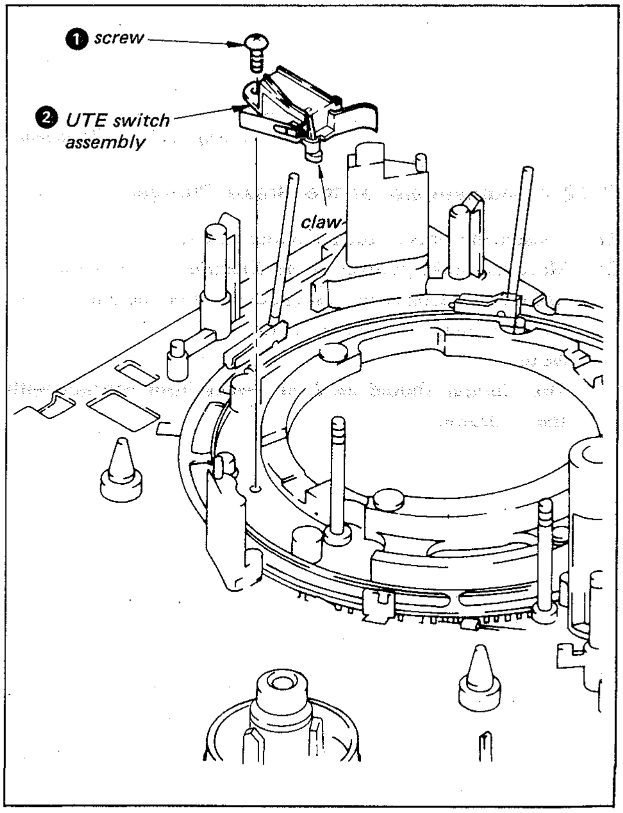

❶ screw
❷ UTE switch assembly
claw

Fig. 3-30. Removal of the UTE switch

3-12. REMOVAL AND ADJUSTMENT OF THE REEL MOTOR SECTION

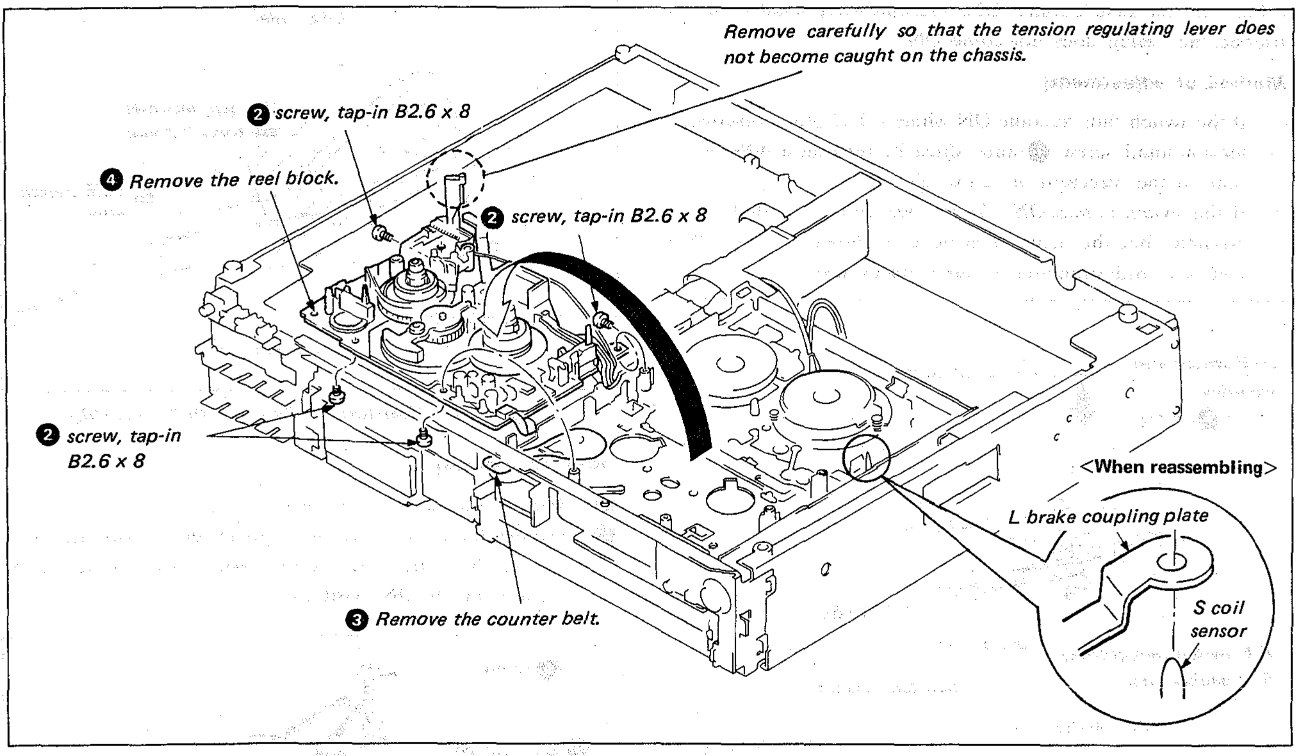
3-12-1. Removal of the Reel Motor Section

❶ Turn the unit so that the top surface of the main body faces down.

❷ Remove the 4 B2.6×8 tap-in screws.

❸ Remove the counter belt.

❹ Remove the reel block.



Remove carefully so that the tension regulating lever does not become caught on the chassis.

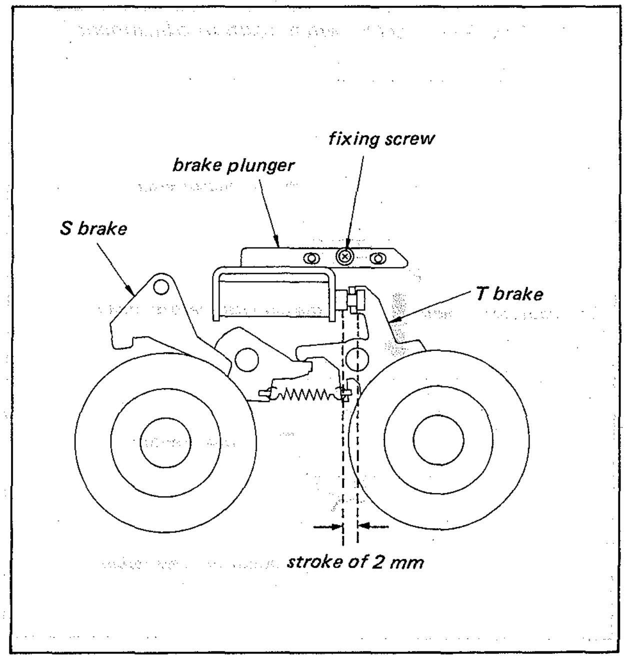
❷ screw, tap-in B2.6 x 8
❹ Remove the reel block.
❷ screw, tap-in B2.6 x 8
❷ screw, tap-in B2.6 x 8
❸ Remove the counter belt.
<When reassembling>
L brake coupling plate
S coil sensor

Fig. 3-31. Removal of the reel motor section

3-12-2. Adjustment of the Brake Plunger

1) Loosen the brake plunger fixing screw.
2) More the brake plunger in the direction of the arrow, and tighten the fixing screw just enough so that the plunger can move through a stroke of 2 mm.

Note:
The plunger should be 2 mm away from contact with the T brake.



fixing screw
brake plunger
S brake
T brake
stroke of 2 mm

Fig. 3-32. Adjustment of the position of the brake plunger

3-12-3. Adjustment of the Soft Brake

[Method of checking]

1) Remove the cassette compartment section, and put the unit in the threaded state without a cassette.
2) As shown in Fig. 3-33, set a tension gauge (SL-0011) on the S reel platform.
3) Set the unit in fast forward mode (put the S reel platform in the free condition), and pull the sector type gauge slowly.
4) Confirm that the reading of the sector type gauge is 8g.

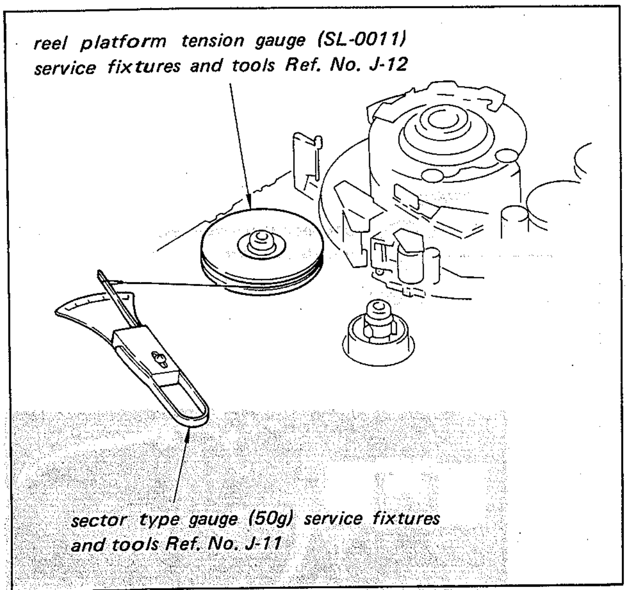

reel platform tension gauge (SL-0011) service fixtures and tools Ref. No. J-12
sector type gauge (50g) service fixtures and tools Ref. No. J-11

Fig. 3-33. How to check the soft brake

[Method of adjustment]

1) Adjust the position of the soft brake lever tension coil spring.

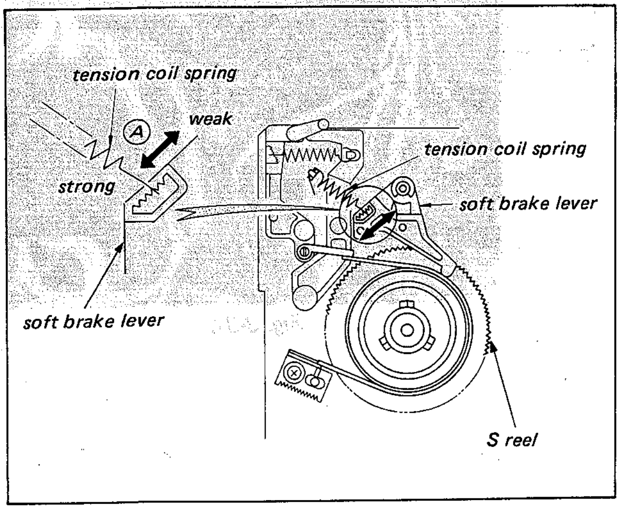

tension coil spring
Ⓐ
weak
strong
soft brake lever
tension coil spring
soft brake lever
S reel

Fig. 3-34. Adjustment of the soft brake

3-12-4. Adjustment of the Position of the Tension Regulating Lever

[Method of adjustment]

1) Put the unit in playback mode.
2) Loosen the adjustment spring until the tape guide pin of the tension regulating lever assembly is positioned to the outside of the outer circumference of shuttle guide 2, as shown in Fig. 3-35. Then adjust by moving the tension regulating band assembly in the direction of arrow Ⓐ .
3) After adjustment, tighten the adjustment screw, being careful that the tension regulating band assembly does not move.

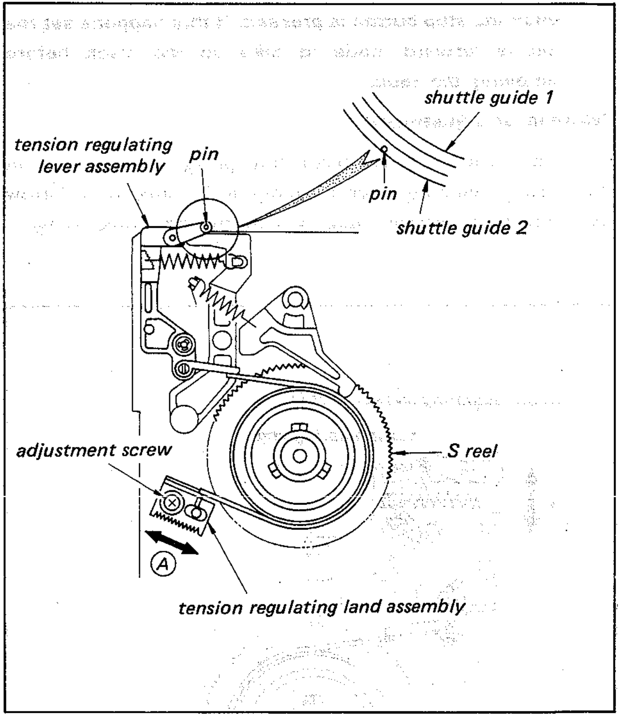

shuttle guide 1
tension regulating lever assembly
pin
pin
shuttle guide 2
adjustment screw
S reel
Ⓐ
tension regulating land assembly

Fig. 3-35. Adjustment of the position of the tension regulating lever

3-13. ADJUSTMENT OF THE FORWARD AND BACK TENSION

[Method of measurement]

1) Connect TP601 and TP602 to short them and stop the rotation detection.
2) Insert the torque cassette (SL-0003C) and put the unit in playback mode.
3) Read the value on the meter on the S reel side after the needle has gone around about once.
   The correct value is 30 g•cm ± 5 g•cm.

Notes:

i) The set must be perfectly level during this measurement.

ii) After the measurement, the tape can become slack when the stop button is pressed. If this happens set the unit is forward mode to take up the slack before removing the tape.

[Method of adjustment]

Move the position of the tension coil spring that is hooked on the tension regulating lever assembly in the direction of arrow Ⓐ until the measured value falls within the correct range.

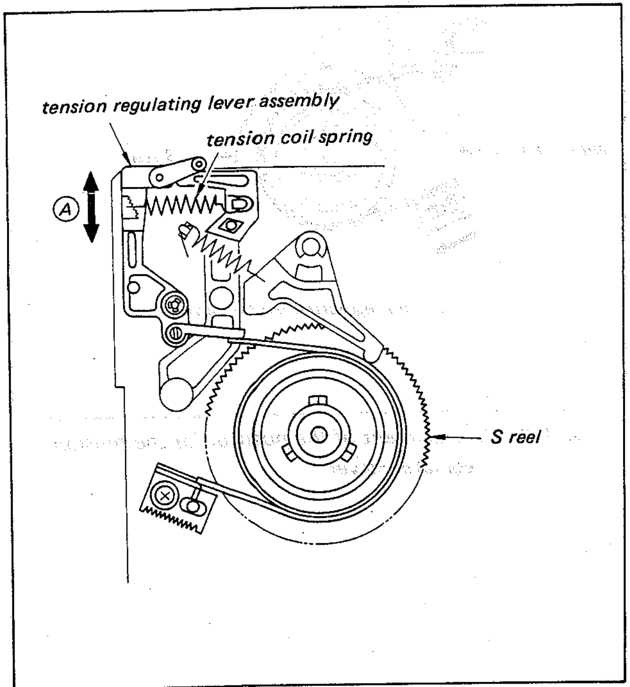

tension regulating lever assembly
tension coil spring
Ⓐ
S reel

Fig. 3-36. Adjustment of the back tension

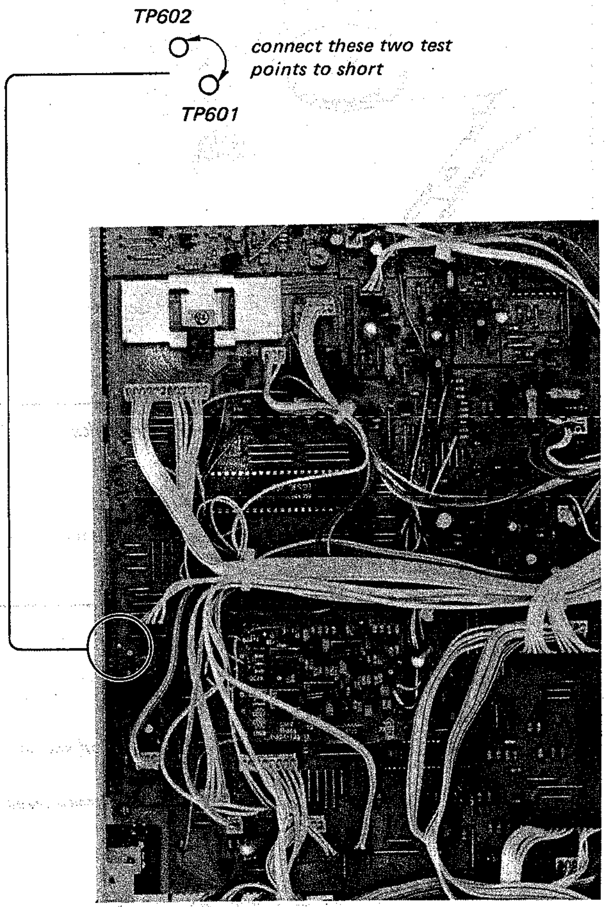

TP602
connect these two test points to short
TP601

Fig. 3-37.

3-14. ADJUSTMENT OF THE FORWARD TORQUE

[Method of measurement]

1) Connect TP601 and TP602, on both ends of R608, to short them and stop the rotation detection.
2) Insert the torque cassette (SL-0003C) and start to record a telecast in βII mode.
3) Read the value on the meter on the T reel side after the needle has gone around about once. The correct range is 70 g・cm ± 5 g・cm.

[Method of adjustment]

1) Remove the front panel.
2) Turn potentiometer RV202 on FS-21 board to adjust the torque until its value falls within the correct range.

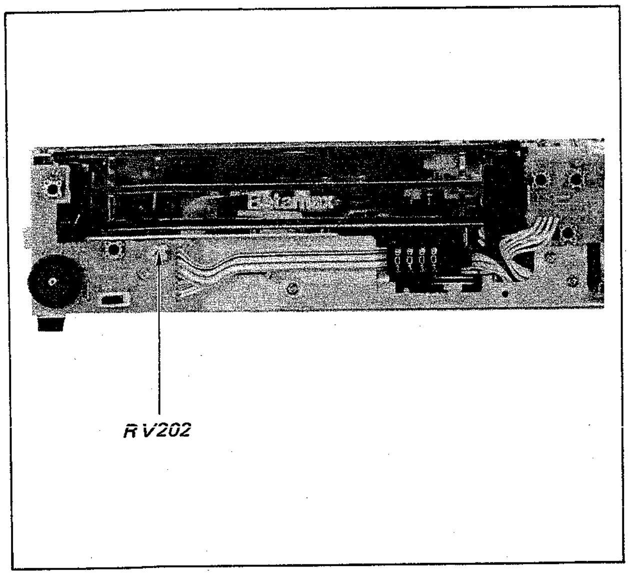


Fig. 3-38.

Note:
When the forward torque is weakened during the measurement the tape can become slack, in which case the set will go into emergency stop mode. In such a case, the only switches that will work are the cassette eject switch and the power switch. It is necessary to temporarily remove the cassette, or to turn the power OFF and back ON.

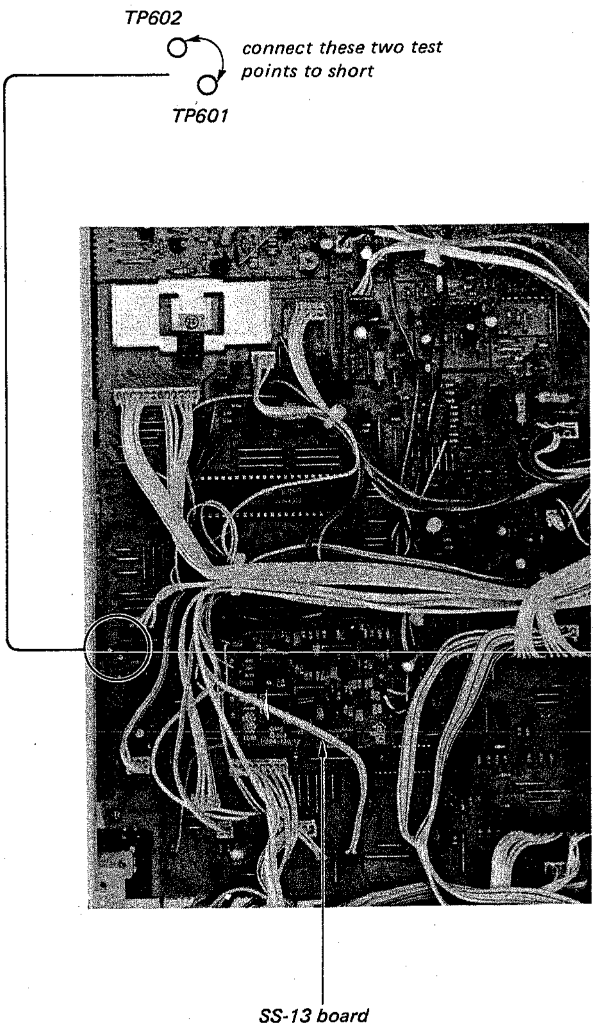


Fig. 3-39.

SECTION 4
TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

This adjustment has a large effect on the picture quality in each mode and on the interchangeability of tapes, so it should be done carefully.

4-1-1. Preparation for adjustment
4-1-2. Adjustment on the entrance side
4-1-3. Adjustment on the exit side

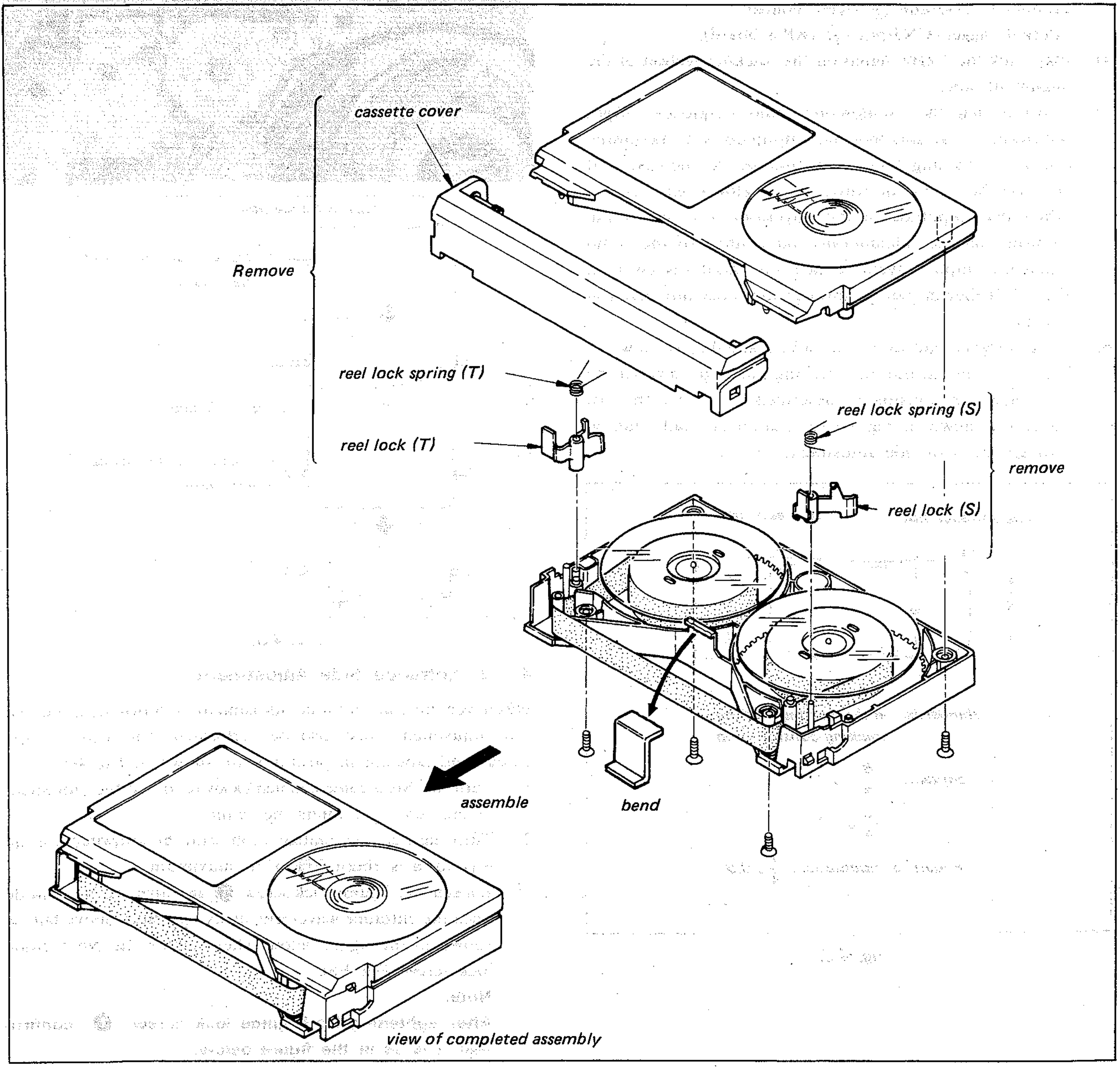

cassette cover
Remove
reel lock spring (T)
reel lock (T)
reel lock spring (S)
remove
reel lock (S)
assemble
bend
view of completed assembly

Fig. 4-1.

4-1-1. Preparation for Adjustment

1) Remove the cassette cover of the alignment tape in accordance with Fig. 4-1.
2) Clean the surfaces contacted by the traveling tape (tape guide, drum tape traveling surface, capstan shaft, pich roller, ACE.FE head surface) with a chamois cloth dipped in methanol.
3) Connect the oscilloscope as follows:
   channel 1: CN3-pin ⑤ (RP-8 board)
   external trigger: CN3-pin ③ (RP-8 board)
4) Play back the 1 kHz signal on the tracking section of the alignment tape.
5) Confirm that the oscilloscope radio frequency output waveform is flat and that the amplitude is a maximum. (Turn the tracking knob right and left to increase and decrease the amplitude while the waveform remains flat. When the amplitude of the waveform is a maximum, confirm that the fluctuations and contact of the radio frequency output waveform meet the standards given in Fig. 4-2. If they do not, go through the procedure given in step 6).
6) If the entrance waveform cannot be made flat, as shown in Fig. 4-3 (a), by turning the tracking knob, go through the "entrance side adjustment" described in 4-1-2; if the exit waveform shown in Fig. 4-3 (b) cannot be made flat, go through the "exit side adjustment" in 4-1-3.

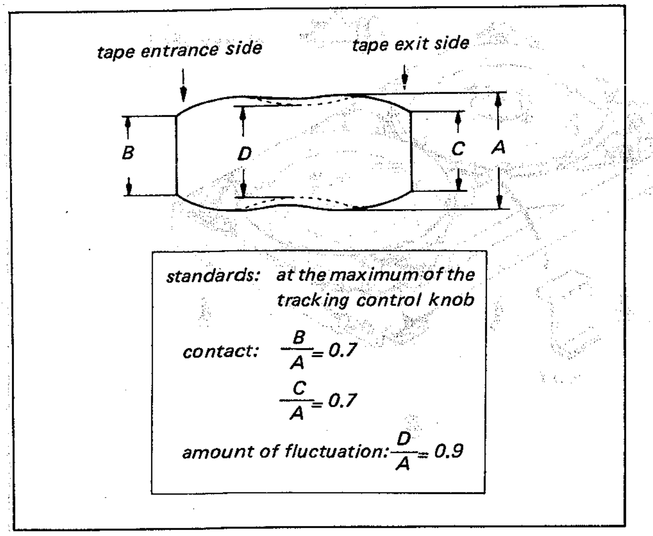
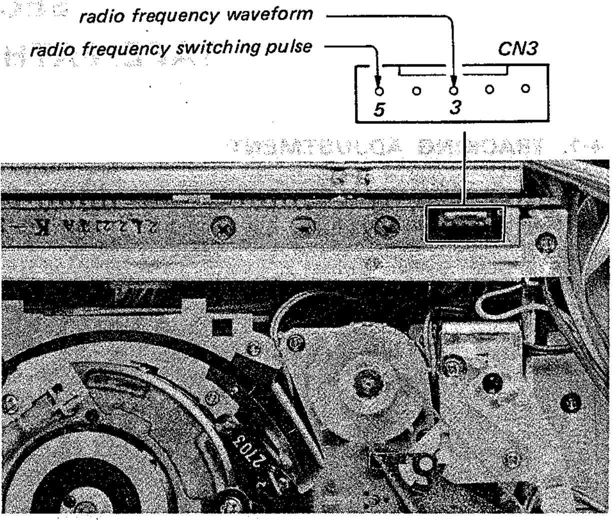

tape entrance side
tape exit side
B
D
C
A
standards: at the maximum of the tracking control knob
contact: B/A = 0.7
C/A = 0.7
amount of fluctuation: D/A = 0.9

Fig. 4-2.


radio frequency waveform
radio frequency switching pulse
CN3
5
3

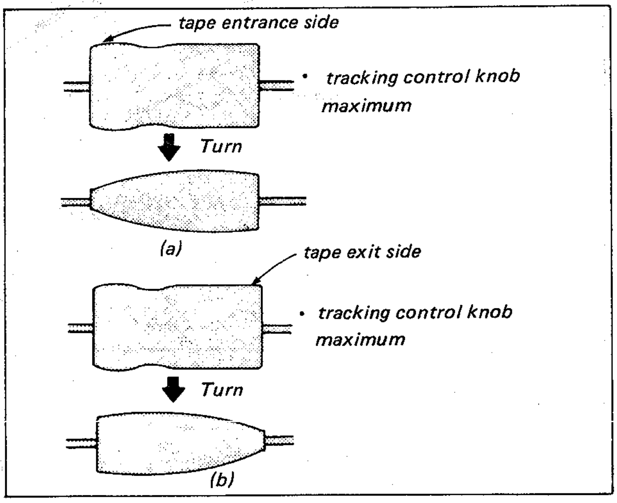

tape entrance side
• tracking control knob maximum
Turn
(a)
tape exit side
• tracking control knob maximum
Turn
(b)

Fig. 4-3.

4-1-2. Entrance Side Adjustment

Whenever the entrance side adjustment is performed, the exit side adjustment must also be performed. The various tape guides and adjustment positions are shown in Fig. 4-5.

1) Turn the No. 6 guide counterclockwise to free the movement of the tape as it enters the drum.
2) Turn the tracking control knob until the amplitude of the waveform is about 60% of its maximum.
3) Loosen No. 5 guide lock screw ❶ and turn the No. 5 guide until the entrance waveform sticks up a little above falt, as shown in the figure below. Then tighten the No. 5 guide lock screw (Fig. 4-6).

   Note:

   After tightening No.5 guide lock screw ❶, confirm that it is as in the figure below.

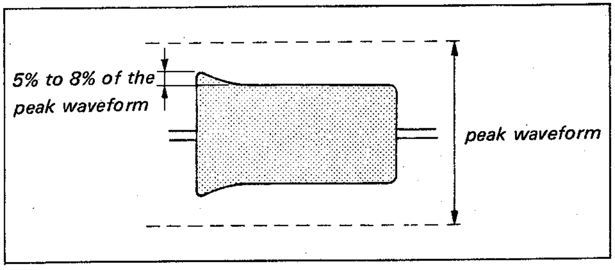

5% to 8% of the peak waveform
peak waveform

Fig. 4-4.

4) Next, lower the No. 6 guide until the waveform is flat.

5) Press the tape down between the No. 4 and No. 5 guide with a finger to lower the entrance side radio frequency waveform, then let go and confirm that the waveform returns to what it was before.

6) In this condition, check the clearance and curl of the No. 5 guide. If there are clearance and curl, adjust as explained in subsequent sections.

Note:

The tape tension between the No. 3, No. 4 and No. 5 guides must be balanced. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

If the waveform cannot be made to look as shown in Fig. 4-4, or if when the tape is pressed and released on the entrance side it takes time for the waveform to return to what it was before, or if it does not return to what it was before, adjust according to the instructions given below.

[What to do when the waveform entrance output will not rise]

1) Check to see if the up-down tension between the No. 3, No. 4 and No. 5 guides is uniform. If it is not, adjust the tilt of the No. 3 and No. 5 guides.
   Note:
   The lower flange of the No. 4 guide must not protrude.

2) Raise the lower flange of the No. 4 guide to raise the entrance output.
   Note:
   It is sufficient to raise the lower flange of the No. 4 guide to 0.4 mm from its lowest position (within a rotation angle of 360°).

3) If the operation performed in step 2) fails to raise the waveform output, turn the No. 5 guide tilt adjustment screw slightly to the left, and the entrance output should rise.

[What to do when the waveform entrance output will not drop]

1) Remove the adjusting plate of the No. 3 guide from the drum. Just before the lower tension of the tape becomes slack, tighten screw ❷.

2) If the tape is in contact with the lower flange of the No. 4 guide, lower the flange. If the tape is sticking up from the lower flange, adjust the tilt of the No. 5 guide so that the tape does not stick up from the lower flange of the No. 4 guide.

[What to do when there is a clearance in the No. 5 guide]

Turn the No. 4 guide counterclockwise to run the tape upward and eliminate the clearance in the No. 5 guide.

Note:

At this time make sure that a large curl is not produced below the No. 4 guide.

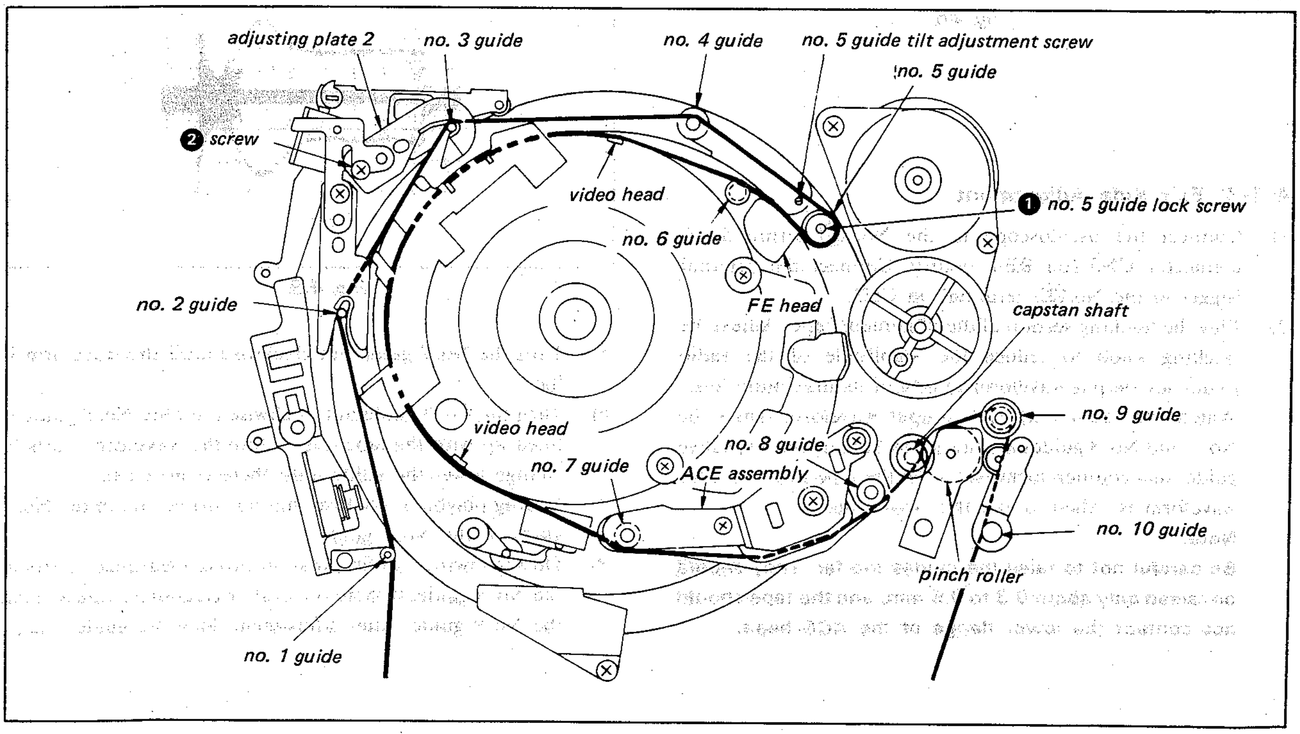
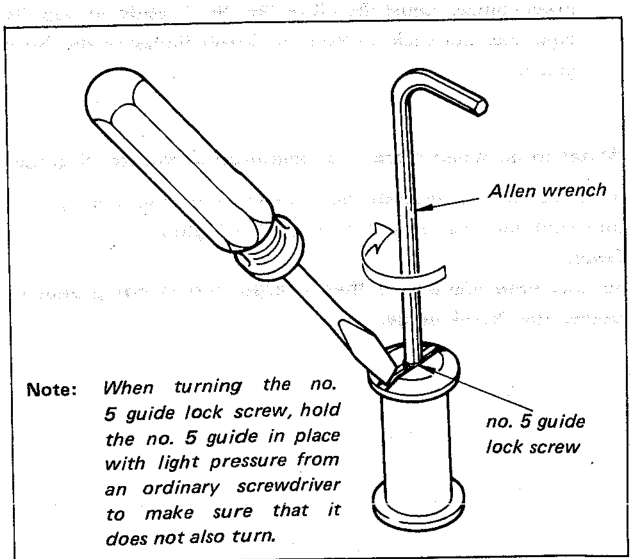

adjusting plate 2
no. 3 guide
no. 4 guide
no. 5 guide tilt adjustment screw
no. 5 guide
❷ screw
video head
no. 6 guide
❶ no. 5 guide lock screw
no. 2 guide
FE head
capstan shaft
no. 9 guide
video head
no. 8 guide
no. 7 guide
ACE assembly
no. 10 guide
pinch roller
no. 1 guide

Fig. 4-5. Tape guide layout diagram

[What to do when there is a curl]

1) When there is a gap below the No. 4 guide: Just before the lower tension on the tape becomes slack, move adjusting plate 2 of the No. 3 guide to the outside.
2) When there is not a gap below the No. 4 guide (when there is a curl below the No. 4 guide):
   i) Check to see if the No. 4 guide has been raised up too high. If it has been raised up too high, turn the adjusting plate clockwise to lower the No. 4 guide.
   ii) If the curl still has not been removed after i), tighten the No. 5 guide tilt adjustment screw in the clockwise direction until the curl is removed.



Note: *When turning the no. 5 guide lock screw, hold the no. 5 guide in place with light pressure from an ordinary screwdriver to make sure that it does not also turn.*

Fig. 4-6.

4-1-3. Exit Side Adjustment

1) Connect the oscilloscope to the No. ⑤ terminal on connector CN3 (on RP-8 board). Connect the external trigger to the No. ③ terminal on CN3.
2) Play the tracking section of the alignment tape. Adjust the tracking knob to reduce the amplitude of the radio frequency output waveform to 60% of its maximum level.
3) Watch the radio frequency output waveform when the No. 7 and No. 8 guides are raised (by turning the respective guide nuts counterclockwise) to let the tape run free. This waveform is called to exit free waveform.

   Note:
   Be careful not to raise the guides too far. They should be raised only about 0.3 to 0.5 mm, and the tape should not contact the lower flange of the ACE head.

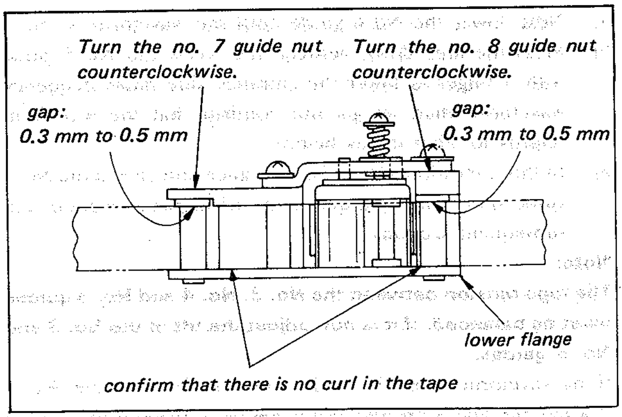
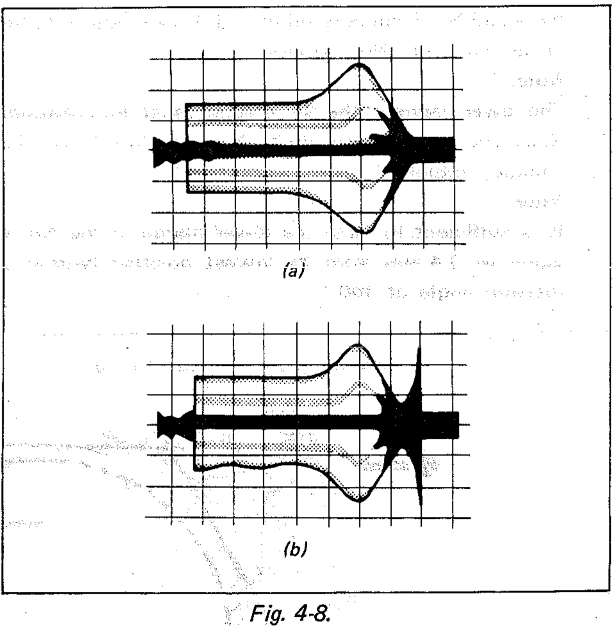

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise.
gap: 0.3 mm to 0.5 mm
gap: 0.3 mm to 0.5 mm
lower flange
confirm that there is no curl in the tape

Fig. 4-7.

4) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-8(a) and (b).
   - If it is outside of this range, adjust according to the procedure in 4-3.



(a)

(b)

Fig. 4-8.

5) Turn the No. 7 guide nut clockwise until the waveform is flat.
6) Turn the No. 8 guide nut clockwise until the No. 8 guide is lined up with the tape (just before the waveform starts to change lower the guide until there is no curl).
7) During playback, confirm that no curl occurs in the No. 7 guide or the No. 8 guide.
8) During rewind, confirm that no curl or clearance occurs in the No. 8 guide. If there is a curl or clearance, adjust using the No. 9 guide. After adjustment, lock the guide nut.

4-2. ADJUSTMENTS AFTER REPLACEMENT OF THE ACE ASSEMBLY

After removal or replacement of the ACE assembly, perform the adjustments listed below.

4-2-1. Exit side tracking adjustment
4-2-2. CTL head (ACE assembly) position adjustment
4-2-3. Audio head (ACE assembly) azimuth adjustment
4-2-4. Audio head (ACE assembly) height adjustment

4-2-1. Exit Side Tracking Adjustment

1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the unit as shown in Fig. 4-9, and turn the tilt adjustment screw to adjust the audio head vertically.

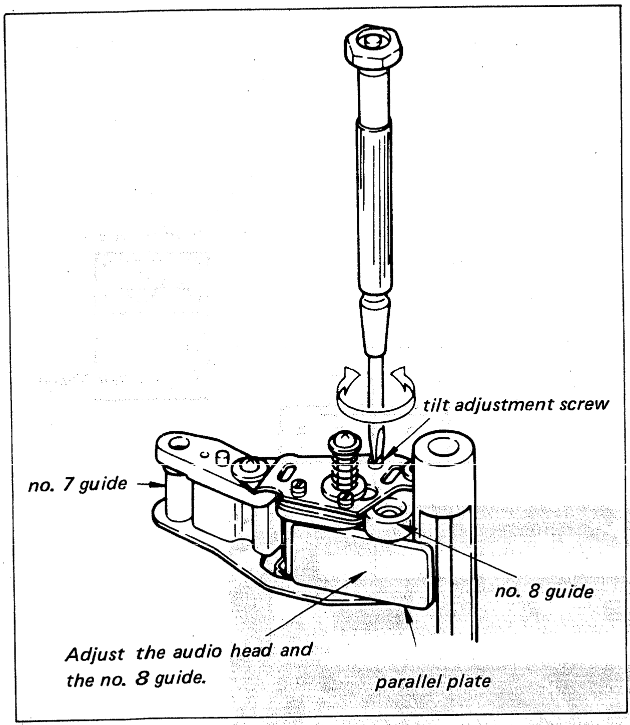

tilt adjustment screw
no. 7 guide
no. 8 guide
Adjust the audio head and the no. 8 guide.
parallel plate

Fig. 4-9.

2) Connect the oscilloscope to terminal ⑤ of connector CN3 (on RP-8 board). Connect the external trigger to terminal ③ of CN3.
3) Play the tracking section of the alignment tape. Adjust the tracking knob until the radio frequency output waveform amplitude is reduced to about 60% of its maximum level. maximum level.
4) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) and observe the radio frequency exit free waveform when the tape runs free.

   Note:

   Be careful not to raise the guide too far. Raise it about 0.3 to 0.5 mm, and be careful that the tape does not contact the lower flange of the ACE head.

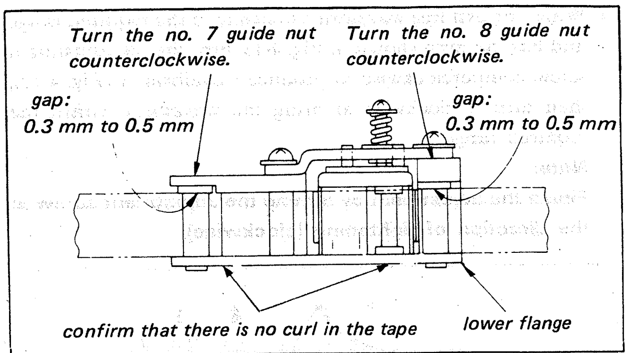
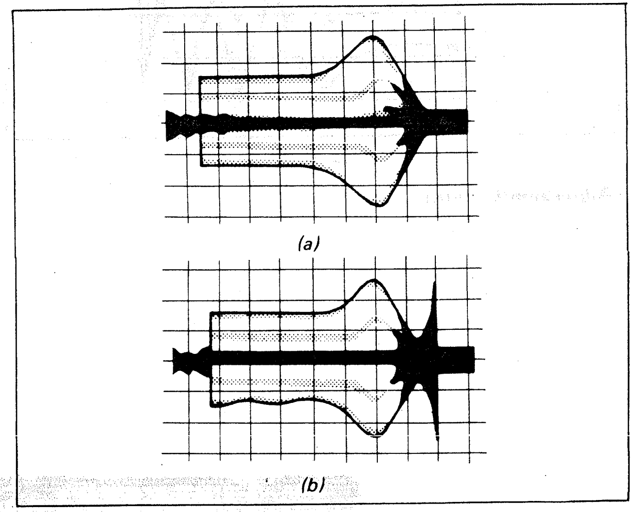

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise.
gap: 0.3 mm to 0.5 mm
gap: 0.3 mm to 0.5 mm
confirm that there is no curl in the tape
lower flange

Fig. 4-10.

5) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-11(a) and (b).



(a)

(b)

Fig. 4-11.

[When the waveform is outside this range]

- When the waveform is outside this range and has the form shown in Fig. 4-12, turn the tilt adjustment screw counterclockwise to adjust until the waveform is within the required range.

  Note:

  Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

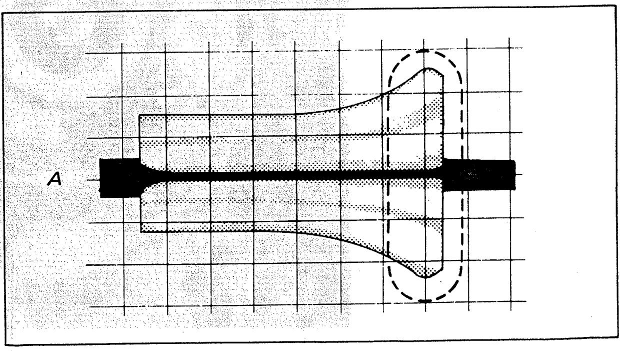


Fig. 4-12.

- When the exit free waveform is outside of the required range and has the form shown in Fig. 4-13, turn the tilt adjustment screw counterclockwise to produce waveform A (Fig. 4-12), then turn it clockwise to bring the waveform within the required range.

  Note:

  Finish the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

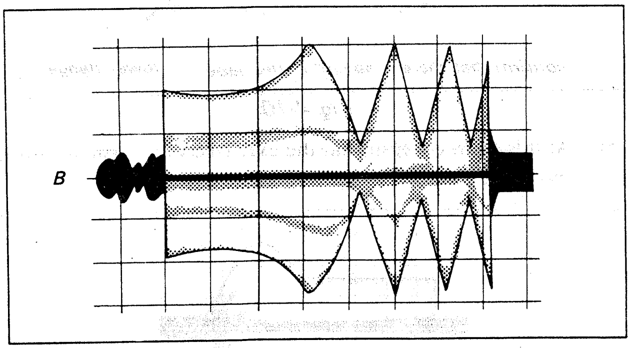
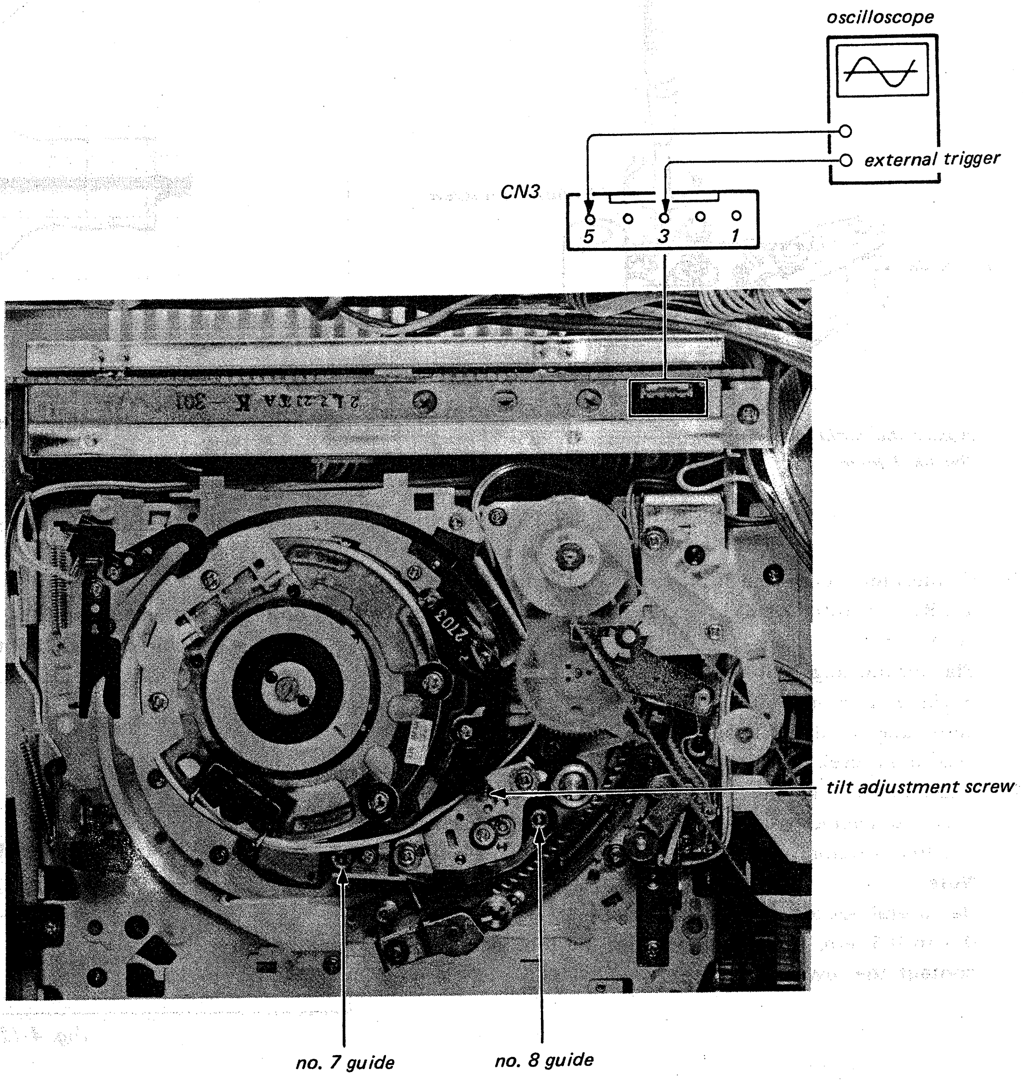


Fig. 4-13.

6) Turn the No. 7 guide nut clockwise to flatten the waveform.
7) Turn the No. 8 guide nut clockwise to line the No. 8 guide up with the tape (lower it so that there is no curl just before the waveform starts to change).
8) If the radio frequency waveform is as shown in Fig. 4-12 on the exit side, repeat the adjustment.

[Adjustment point]

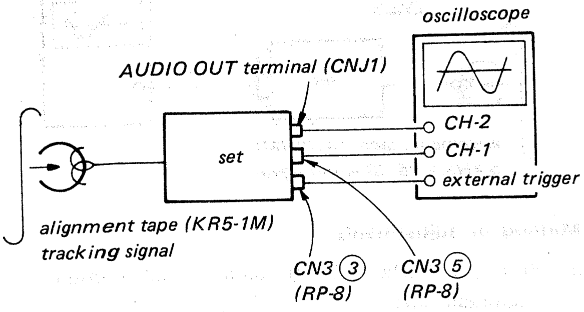

oscilloscope
external trigger
CN3
5
3
1
tilt adjustment screw
no. 7 guide
no. 8 guide

4-2-2. CTL Head (ACE Assembly) Position Adjustment

This adjustment includes the mechanical CTL head mounting position adjustment and the electrical tracking control center adjustment. The tracking control center adjustment is to be performed first, followed by the mechanical adjustment of the head mounting position.

[Connections]

1) Playback


oscilloscope
AUDIO OUT terminal (CNJ1)
set
CH-2
CH-1
external trigger
alignment tape (KR5-1M)
tracking signal
CN3 ③
(RP-8)
CN3 ⑤
(RP-8)

[Method of adjustment]

1) Play the tracking signal section of the alignment tape.
2) Turn the tracking control knob clockwise or counterclockwise to the center click position. Confirm that the amplitude of the radio frequency output signal is at its maximum level. Also confirm that the audio signal 0 level position occurs at the location of the channel B waveform. If the necessary standards are not met follow the procedure in 3).

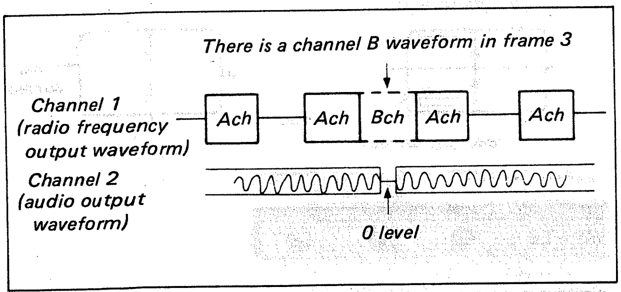

There is a channel B waveform in frame 3
Channel 1
(radio frequency
output waveform)
Ach
Ach
Bch
Ach
Ach
Channel 2
(audio output
waveform)
0 level

Fig. 4-14.

3) Tracking center adjustment
   Refer to electrical adjustment 2 in section 5-3-2.
4) CTL head position adjustment
   a. Set the tracking control knob at the center click position.
   b. Loosen the 2 ACE assembly position adjustment screws, then use a tool such as an ordinary screwdriver to slide the ACE assembly to where the radio frequency output waveform amplitude becomes a maximum.
   c. Play the color bar signal on the alignment tape and check the picture quality.
   d. Tighten the position adjustment screws, then lock them.

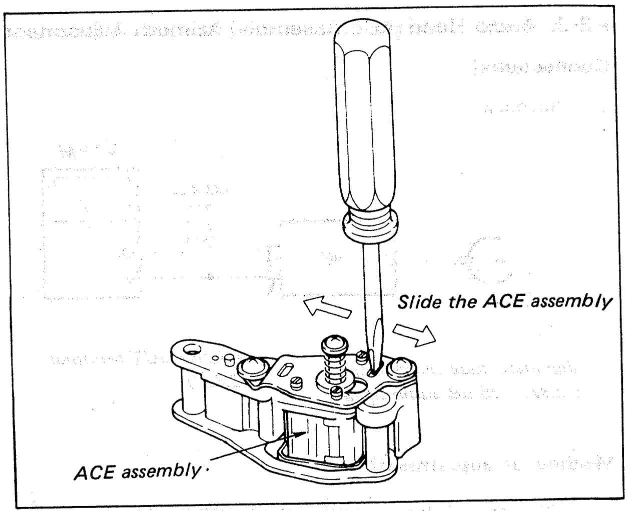
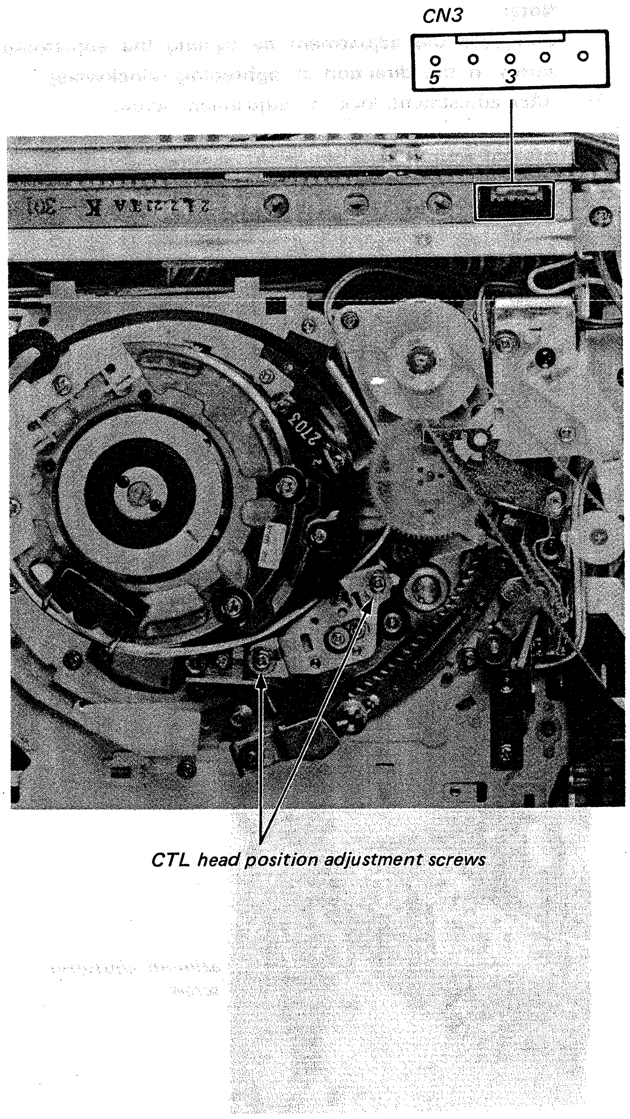

Slide the ACE assembly
ACE assembly

Fig. 4-15.

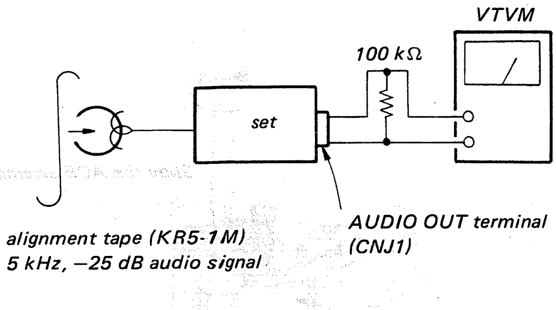
[Adjustment point]


CN3
5
3
CTL head position adjustment screws

4-2-3. Audio Head (ACE Assembly) Azimuth Adjustment

[Connections]

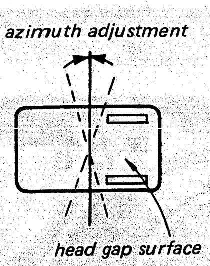
1) Playback

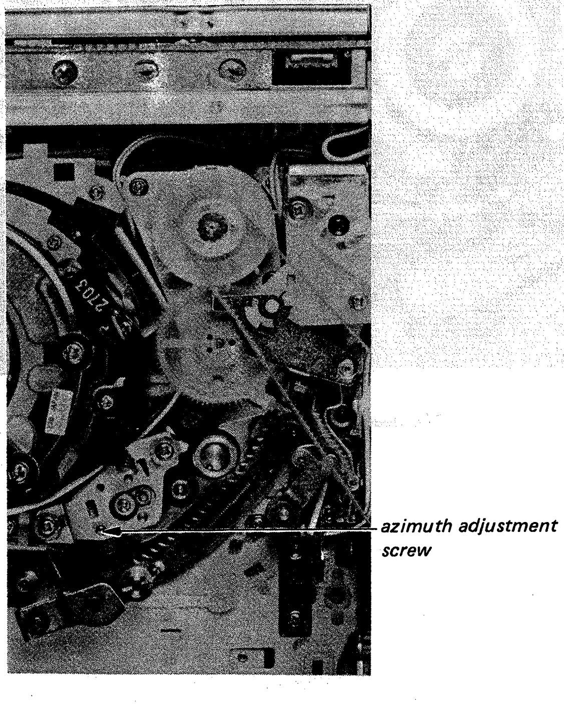

VTVM
100 kΩ
set
alignment tape (KR5-1M)
5 kHz, −25 dB audio signal
AUDIO OUT terminal
(CNJ1)

[Method of adjustment]

1) Play the 5 kHz, −25 dB audio signal section of the alignment tape.
2) Adjust the azimuth adjustment screw until the output level (VTVM indication) is a maximum.
   Note:
   Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).
3) After adjustment, lock the adjustment screw.

[Adjustment point]


azimuth adjustment
head gap surface


azimuth adjustment screw

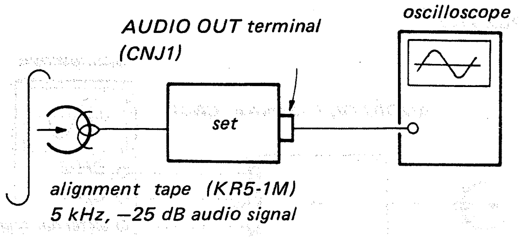
4-2-4. Audio Head (ACE Assembly) Height Adjustment

[Condition]

This adjustment must only be performed after the exit side tracking adjustment has been completed.

[Connections]

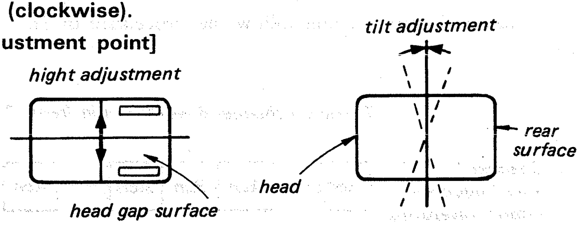
1) Playback

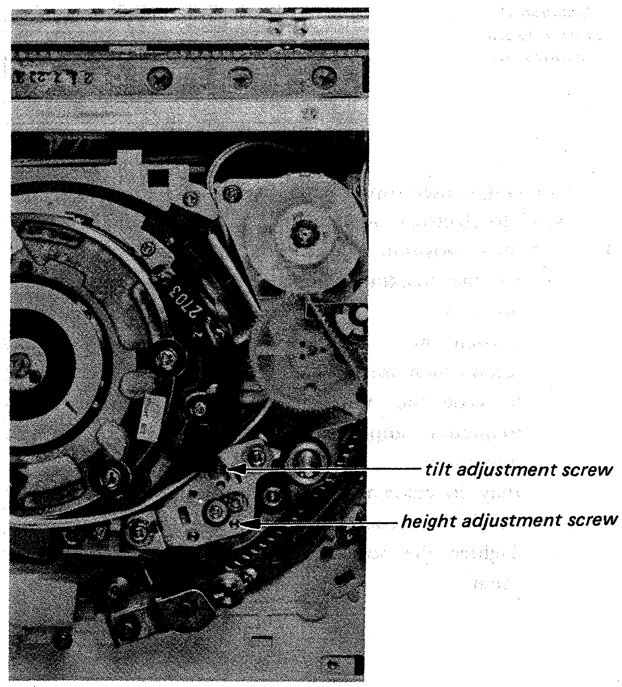

AUDIO OUT terminal
(CNJ1)
oscilloscope
set
alignment tape (KR5-1M)
5 kHz, −25 dB audio signal

[Method of adjustment]

1) Play the 5 kHz, −25 dB audio signal section of the alignment tape.
2) Adjust the height adjustment screw and the tilt adjustment screw so that the amplitude of the audio line output waveform (5 kHz) becomes a maximum.
   Note:
   Both of these adjustment screws must be turned in the same direction and through the same angle, and not more than ±30°. Complete the adjustment by turning the adjustment screws in the direction of tightening (clockwise).

[Adjustment point]


hight adjustment
tilt adjustment
rear surface
head
head gap surface


tilt adjustment screw
height adjustment screw

4-3. ADJUSTMENTS AFTER REPLACEMENT OF THE CAPSTAN MOTOR

When the capstan motor has been removed or replaced, perform the following adjustments.
4-3-1. Capstan shaft vertical adjustment
4-3-2. Exit side tracking adjustment

4-3-1. Capstan Shaft Vertical Adjustment

1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the No. 10 guide vertically, as shown in Fig. 4-16.
2) Loosen the mounting screw, then turn adjustment screw until the capstan motor shaft is vertical.
3) After the adjustment, tighten the mounting screw.

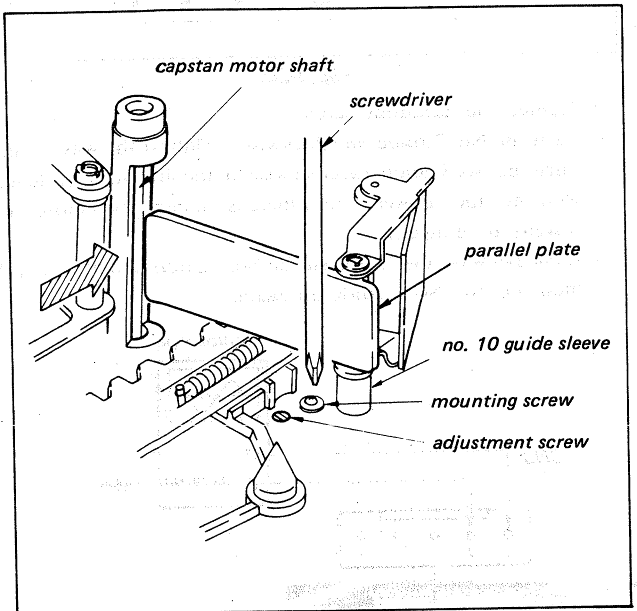

capstan motor shaft
screwdriver
parallel plate
no. 10 guide sleeve
mounting screw
adjustment screw

Fig. 4-16.

4-3-2. Exit Side Tracking Adjustment

1) Connect an oscilloscope to terminal No.⑤of connector CN3 on RP-8 board. Then connect the external trigger to terminal ③ of CN3.
2) Play the tracking section of the alignment tape. Adjust the tracking knob until the amplitude of the radio frequency output waveform is reduced to about 60% of its maximum level.
3) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) to free the running of the tape, and observe the radio frequency exit free waveform.
Note:
Be careful not to raise the guides too far. Raise them about 0.3 to 0.5mm. Make sure that the tape does not touch the lower flange of the ACE head.

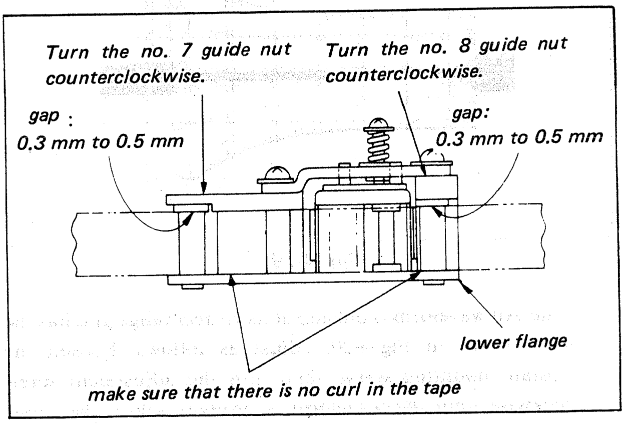

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise.
gap : 0.3 mm to 0.5 mm
gap: 0.3 mm to 0.5 mm
lower flange
make sure that there is no curl in the tape

Fig. 4-17.

4) At this time, confirm that the exit free waveform is within the range shown Fig. 4-18(a) and (b).

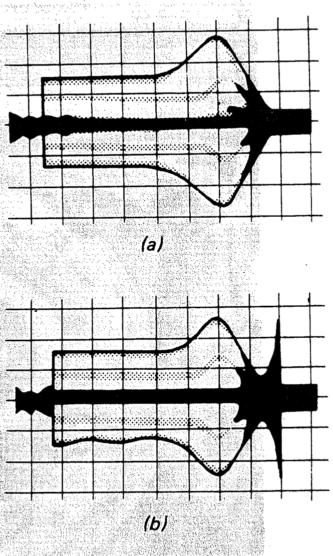


Fig. 4-18.

[When the waveform is out of range]

- When the exit free waveform is out of the correct range, and is in the form shown in Fig. 4-19, adjust as follows. Loosen the capstan mounting screw, then turn the adjustment screw counterclockwise until the waveform falls within the range shown in Fig. 4-18(a) and (b).

  Note:
  When turning the adjustment screw, wait (10 to 15 seconds) until the waveform becomes stable before adjusting further.
  Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

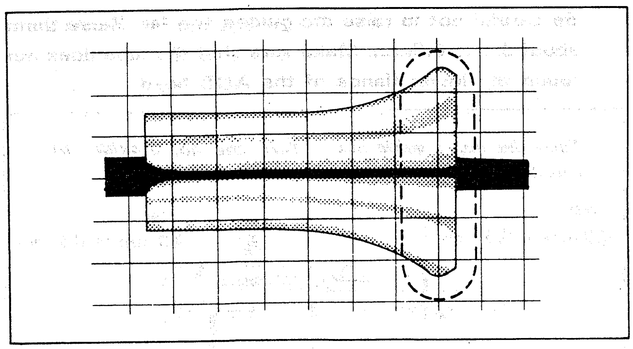


Fig. 4-19.

- If the exit waveform is outside of its correct range and has the form shown in Fig. 4-20, adjust as follows. Loosen the capstan mounting screw, then turn the adjustment screw clockwise until the waveform is brought within the range shown in Fig. 4-18(a) and (b).

[Adjustment point]

Note:
When turning the adjustment screw, wait (10 to 15 seconds) until the waveform becomes stable before adjusting further. Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

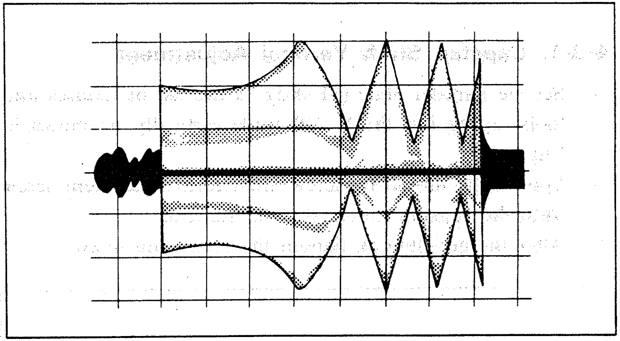
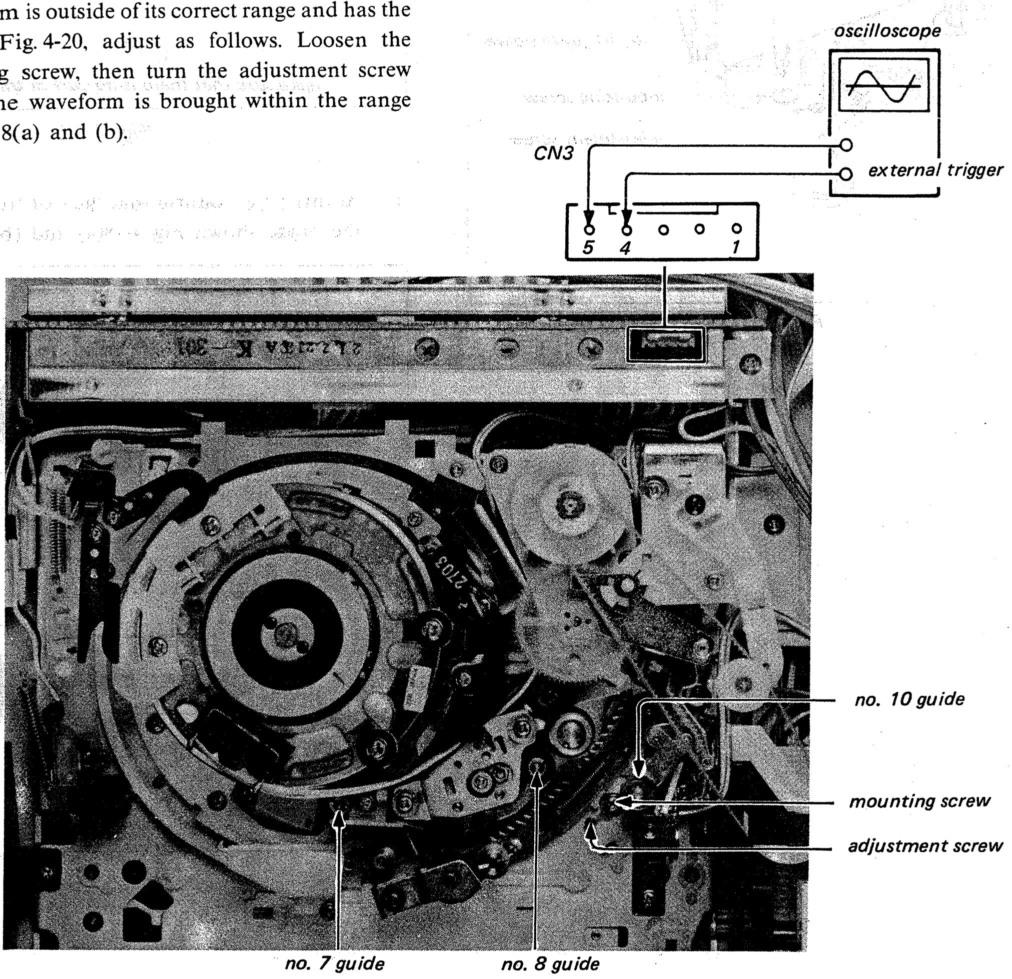


Fig. 4-20.

5) Tighten the mounting screw.
6) Turn the No. 7 guide nut clockwise to flatten the waveform.
7) Turn the No. 8 guide nut clockwise to line the No. 8 guide up with the tape. (Lower it until there is no curl just before the waveform changes.)
8) If the exit waveform rises, use the No. 7 guide to flatten it and then line the No. 8 guide up again.



4-4. HOW TO INSPECT THE TAPE TRAVELING WHEN ADJUSTING THE TAPE PATH

Adjust and check the tape path using the alignment tape following the adjustment guide, then check the tape travel using the procedure below.

1) Get one L-830 reel ready (these are widely available commercially). Remove the cassettte cover referring to Fig. 4-1 of the adjustment guide.
2) Run the L-830 tape in playback mode and check the following points.
   i) Entrance side
   Confirm that the tape does not contact the upper flange of the No. 4 guide or the No. 6 guide, and is not damaged. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-21)
   ii) Exit side
   Confirm that the tape does not contact the upper flange of the No. 7 guide or the No. 8 guide, or the upper or lower flange of the No. 10 guide, and is not scratched. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-22)
   iii) If the tape was found to not be running correctly in step ii), readjust the tape path using the alignment tape, following the adjustment guide.
   If the tape is not running correctly on the entrance side, refer to section 4-1-2 of the adjustment guide.
   If the tape is not running correctly on the exit side, refer to section 4-1-3 of the adjustment guide.

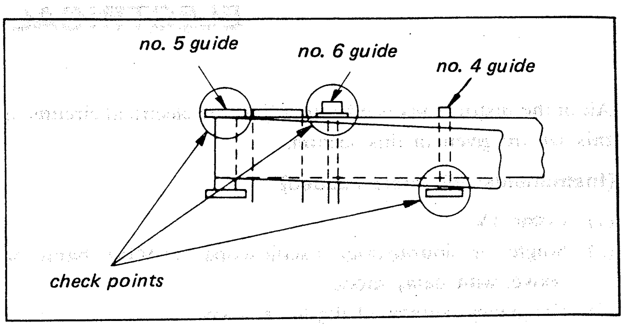


Fig. 4-21.

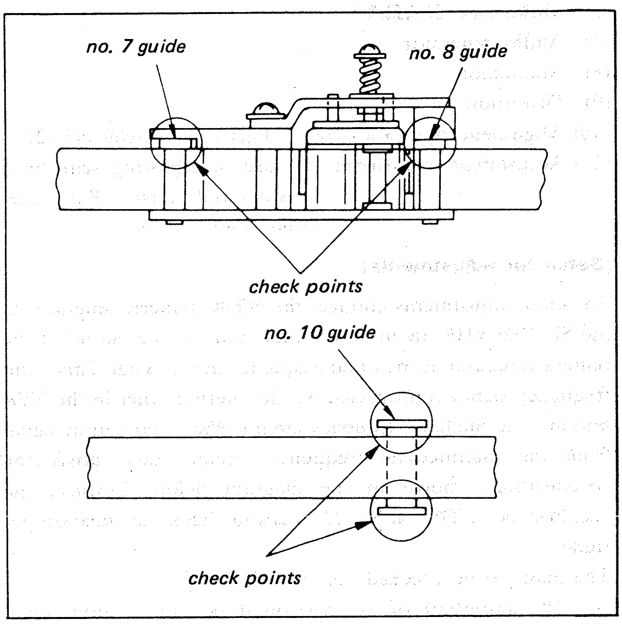


Fig. 4-22.

SECTION 5
ELECTRICAL ADJUSTMENTS

All of the instructions needed to adjust the electrical circuits in this set are given in this section.

[Instruments and tools needed]

(1) Color TV
(2) Single or double-trace oscilloscope, 15 MHz band or above, with delay mode
(3) Frequency counter (4 digits or more)
(4) NTSC pattern generator
(5) Digital voltmeter
(6) Multitester (20 kΩ/V)
(7) Audio generator
(8) Attenuator
(9) Distortion meter
(10) Alignment tape (KR5-1M) Part code: (8-969-995-82)
(11) Adjustment screwdriver (for use in adjusting semi-fixed resistors and coils) Part code: 7-700-733-01

[Setup for adjustments]

For these adjustments connect the NTSC pattern generator to the SL-2400 VHF antenna terminal, and use the output of the pattern generator as the radio frequency input signal. This radio frequency signal is processed by the internal tuner in the VTR and the intermediate frequency circuit. The video output signal from the intermediate frequency circuit must satisfy the specifications shown in the diagram below. Connect the oscilloscope to TP2 on YC-22 board to check the video output signal.

The items to be checked are the following:

(1) The amplitude of the horizontal synchronization signal must be about 0.3 Vp-p.
(2) The amplitude of the video signal must be about 0.7 Vp-p.
(3) The amplitude of the burst signal must be about 0.3 Vp-p. The video (color bar) signal used in the adjustments is shown in Fig. 5-1.

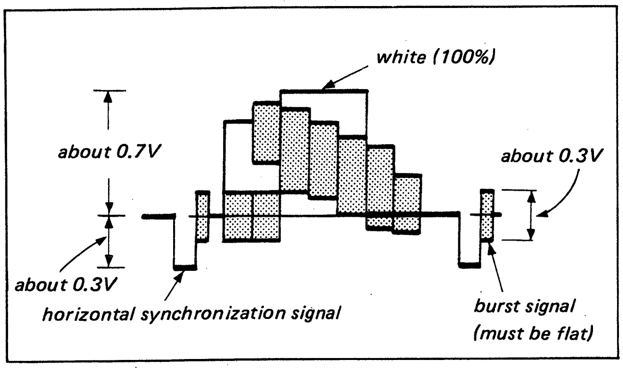
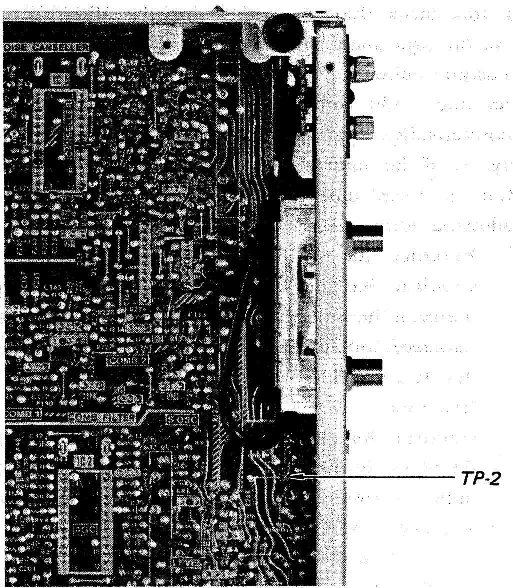

white (100%)
about 0.7V
about 0.3V
about 0.3V
horizontal synchronization signal
burst signal (must be flat)

Fig. 5-1. Pattern generator color bar signal



YC-22 board

[Method of terminating in 75Ω]

To terminate the video output terminal (CNJ2), do it as shown in Fig. 5-2.

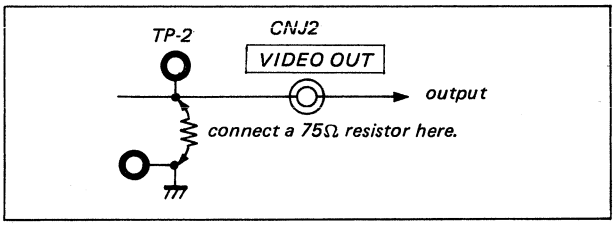


Fig. 5-2. 75Ω termination

(contents of the KR5-1M alignment tape)

	mode	video signal	audio signal	time
1	βII	Color Bar	3kHz −5dB	4 minutes each
2		Monoscope	333Hz −25dB	
3		RF sweep	5kHz −25dB	
4		Tracking	1kHz −5dB	
5	βIII	Color Bar	3kHz −5dB	
6		Monoscope	5kHz −25dB	
7		Color Bars/ Beta hi-fi: 400Hz ± 25kHz DEV.	------------	

[On the color bar signal]

The 75% color bar signal recorded on the alignment tape is shown in Fig. 5-3.

Note:

Observed at TP2 on YC-22 board.

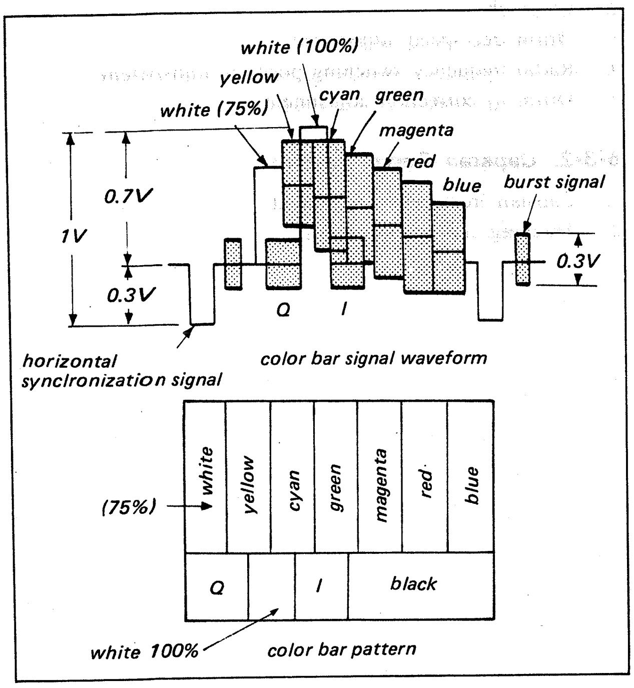

white (100%)
yellow
white (75%)
cyan
green
magenta
red
blue
burst signal
0.7V
1V
0.3V
0.3V
Q
I
horizontal synclronization signal
color bar signal waveform
(75%)
white
yellow
cyan
green
magenta
red
blue
Q
I
black
white 100%
color bar pattern

Fig. 5-3. Color bar signal an the alignment tape

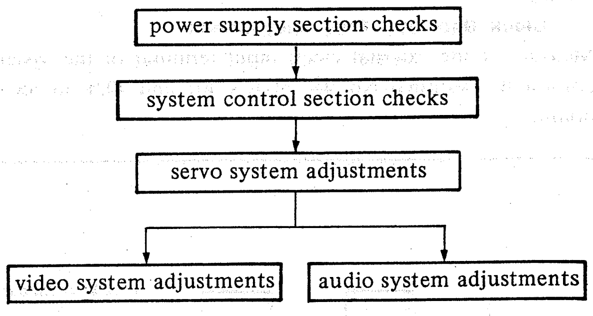
[Standard input/output levels and impedances]

Input and output terminals

Video input:	pin jack input signal: 1 Vp-p, 75Ω non-equilibrium, synchronization negative
Video output:	pin jack output signal: 1 Vp-p, 75Ω non-equilibrium, sychronization negative
Audio input:	mini jack input level: −10 dBs (0 dBs = 0.775 Vrms) input impedance: 47 kΩ or higher
Line audio output:	mini jack standard output: −5 dBs (440 mV) at 100 kΩ negative load load impedance: 10 kΩ or higher
Microphone input:	mini jack −60 dBs, for low impedance use

[Adjustment procedure]

Adjust according to the procedure described below.


power supply section checks
system control section checks
servo system adjustments
video system adjustments
audio system adjustments

5-1. POWER SUPPLY SECTION CHECKS

Perform thes measurements in E-E mode (power switch ON mode).

1. Unregulated Switch 16V Check (PS-19 Board)

The voltage between terminal No.① of CN3 and terminal No.⑤ on the ground side should be 19V ± 3V.

2. Unregulated Switch 45V Check (PS-19 Board)

The voltage between terminal No.① of CN4 and terminal No.④ on the ground side should be 48V ± 5V.

3. Unregulated Switch −12V Check (PS-19 Board)

The voltage between terminal No.② of CN4 and terminal No.④ on the ground side should be −10.5V ± 1.5V.

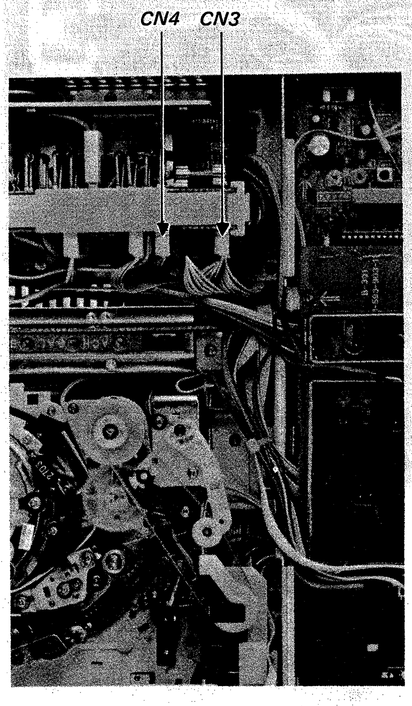
4. Switched (REG) 12V (PS-19 Board)

The voltage between terminal No.② of CN3 and terminal No.⑤ on the ground side should be 12V ± 0.15V.

5. Switched (System) 12V (PS-19 Board)

The voltage between terminal No.⑥ of CN3 and terminal No.⑨ on the ground side should be 12V ± 0.3V.

[Adjustment point (PS-19 board)]

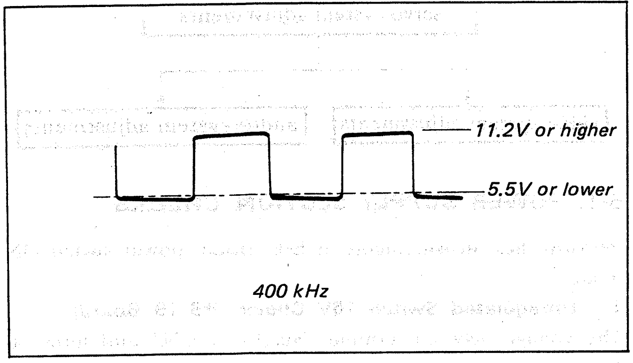


5-2. SYSTEM CONTROL SECTION CHECKS

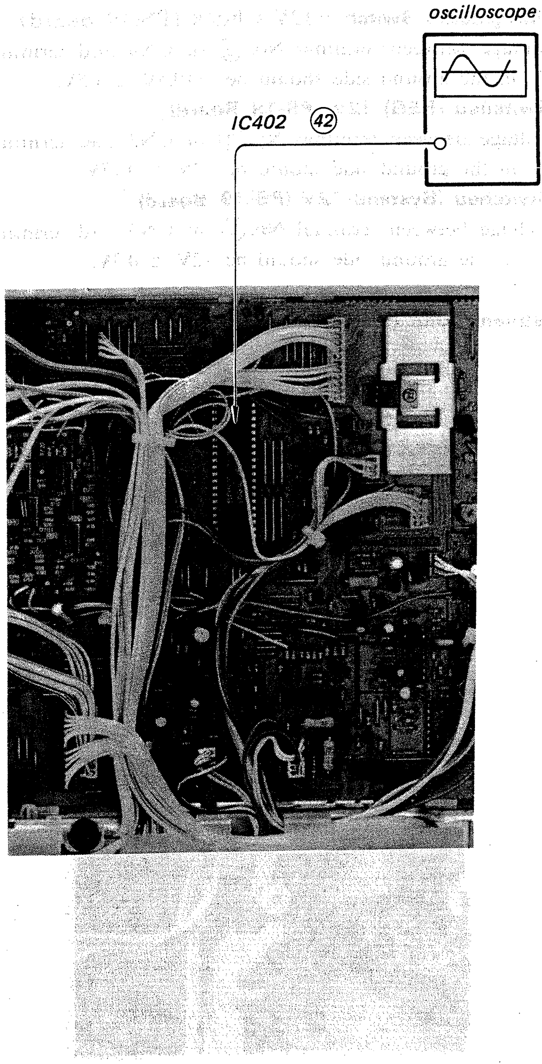
Perform these measurements in E-E mode (power switch ON mode).

1. Clock Oscillator Frequency Check

Measure at the external clock input terminal of the system control IC (terminal No. ㊷ of ICs 401 and 402) on SS-13 board.



[Measurement point (SS-13 board)]



5-3. SERVO SYSTEM ADJUSTMENTS

[Adjustment procedure]

5-3-1. Drum Servo System

1. Voltage checks
2. Clock check
3. Drum free speed adjustment
4. Radio frequency switching position adjustment
5. Drum f_H correction adjustment

5-3-2. Capstan Servo System

1. Capstan free speed adjustment
2. Tracking center adjustment

5-3-1. Drum Servo System Adjustments

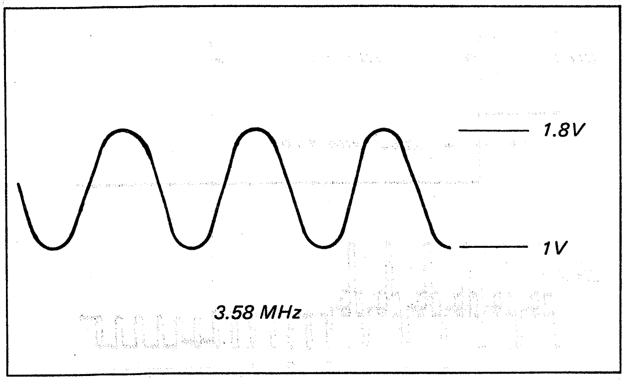
1. Voltage checks

Measure the voltage at terminals No. ㉚, No.⑦ and No.⑩ of the servo IC (IC1).

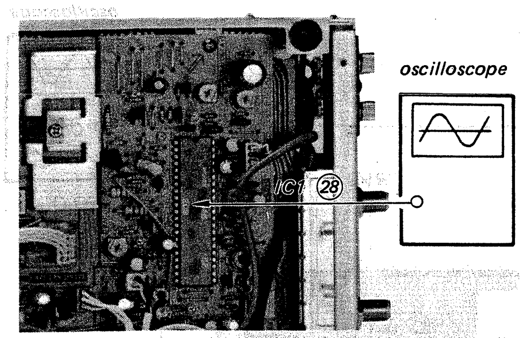
terminal No. ㉚ .... 5.7V ± 0.3V
terminal No. ⑦ .... 8.95V ± 0.3V
terminal No. ⑩ .... 3.4V ± 0.3V

2. Clock check

Measure the waveform at terminal No. ㉘ of the servo IC (IC1).



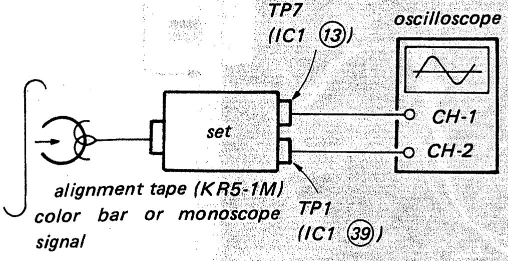
[Measurement point (SS-13 board)]


oscilloscope
IC1 ㉘

3. Drum free speed adjustment

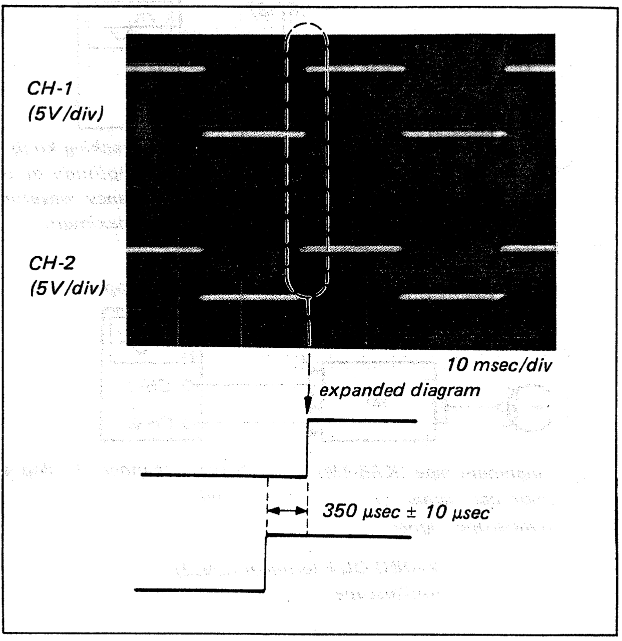
[Connections]

1) Playback

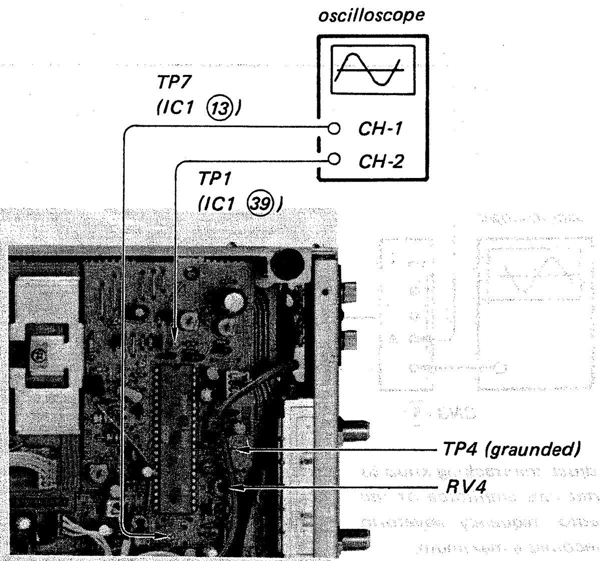

TP7
(IC1 ⑬)
oscilloscope
set
CH-1
CH-2
alignment tape (KR5-1M)
color bar or monoscope
signal
TP1
(IC1 ㊴)

[Method of adjustment]

1) Play the color bar signal or the monoscope signal on the alignment tape.
2) Adjust to 350 μsec ± 10 μsec using RV4.



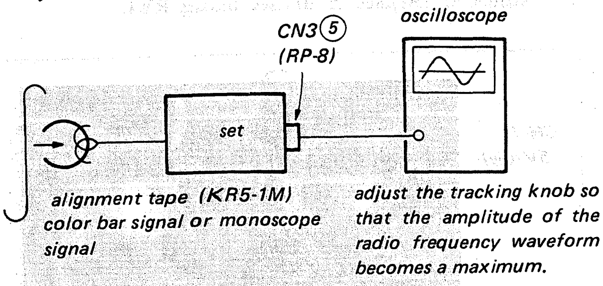
[Adjustment point: servo section (SS-13 board)]


oscilloscope
TP7
(IC1 ⑬)
CH-1
CH-2
TP1
(IC1 ㊴)
TP4 (graunded)
RV4

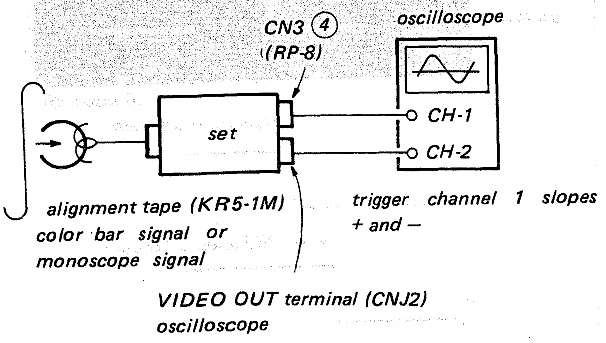
4. Radio frequency switching position adjustment

[Connections]

1) Playback

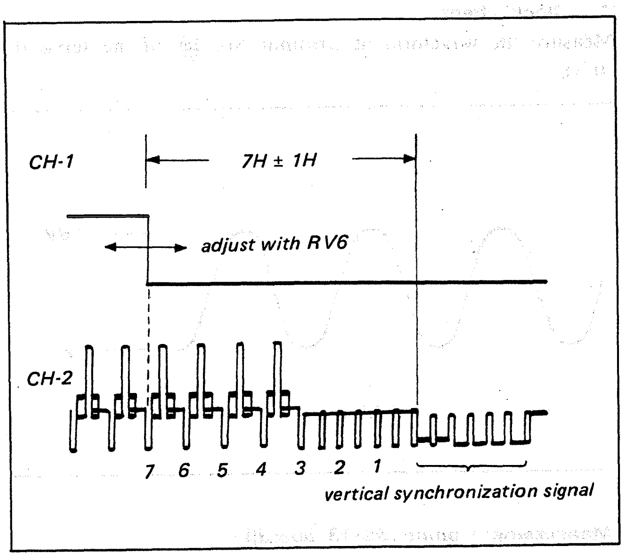

CN3⑤
(RP-8)
oscilloscope
set
alignment tape (KR5-1M)
color bar signal or monoscope signal
adjust the tracking knob so that the amplitude of the radio frequency waveform becomes a maximum.

2) Playback

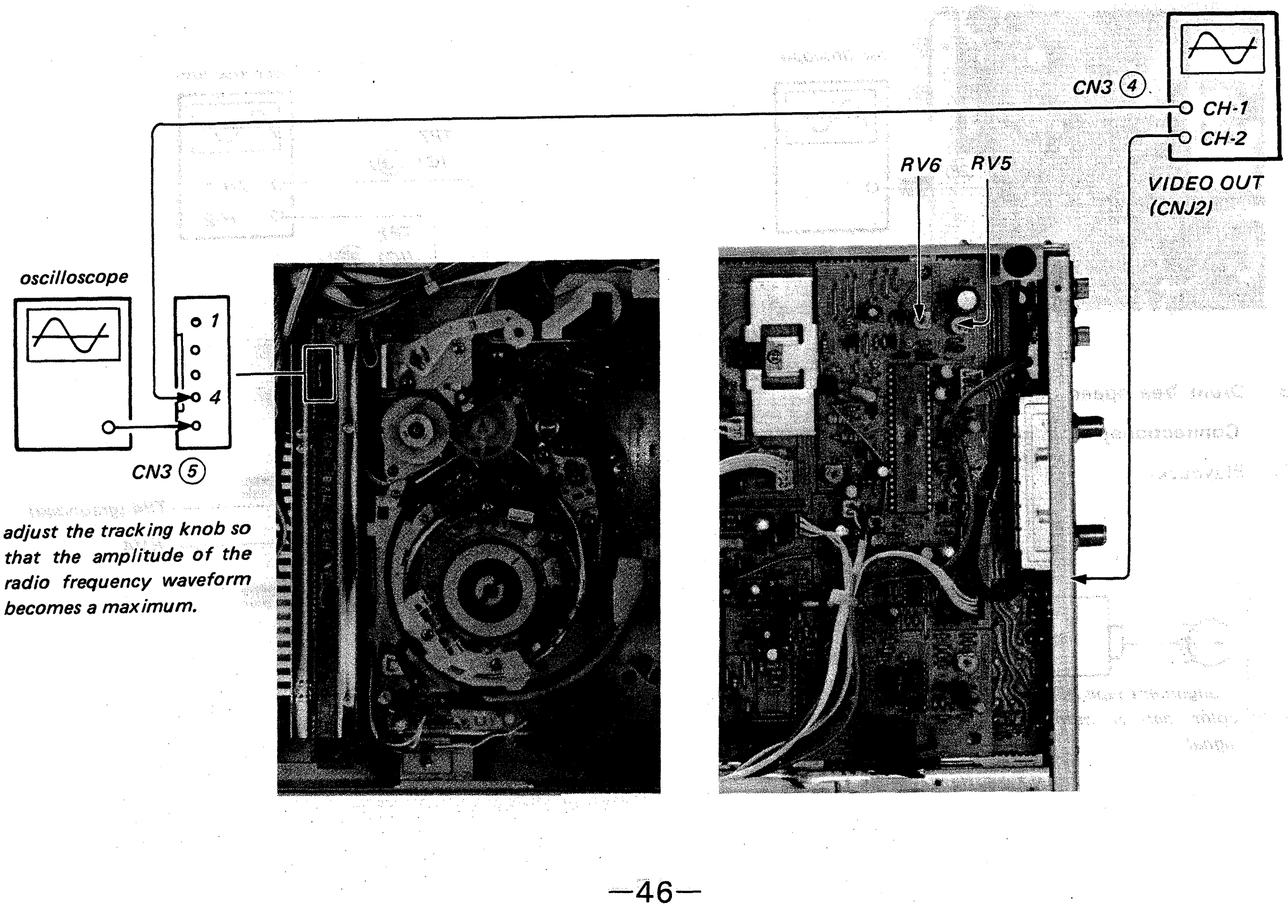

CN3 ④
(RP-8)
oscilloscope
set
CH-1
CH-2
alignment tape (KR5-1M)
color bar signal or
monoscope signal
trigger channel 1 slopes
+ and –
VIDEO OUT terminal (CNJ2)
oscilloscope

[Method of adjustment]

1) Play the color bar signal or the monoscope signal on the alignment tape and adjust the tracking knob so that the amplitude of the radio frequency waveform at terminal No. ⑤ of CN3 becomes a maximum.
2) Set the trigger slope of the oscilloscope to +.
3) Adjust RV6 (PG.A) so that the time from the falling edge of the channel 1 waveform and the vertical synchronization signal on channel 2 becomes $7_H \pm 1_H$ lines.

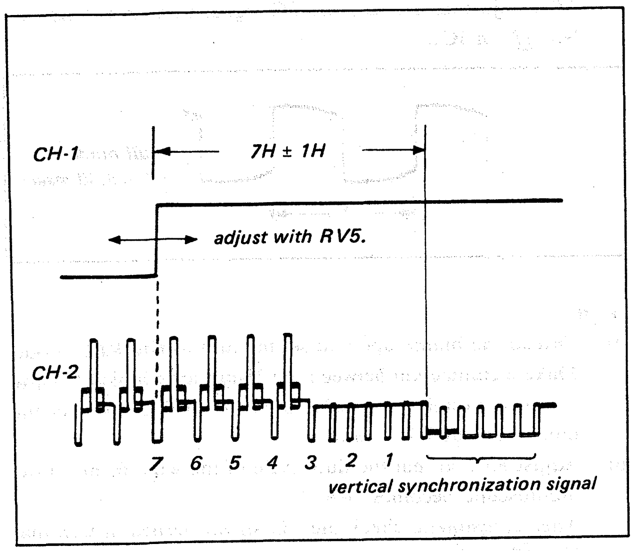

CH-1
7H ± 1H
adjust with RV6
CH-2
7
6
5
4
3
2
1
vertical synchronization signal

[Adjustment point: servo section (SS-13 board)]


oscilloscope
CN3 ④
CH-1
CH-2
RV6
RV5
VIDEO OUT
(CNJ2)
oscilloscope
1
4
CN3 ⑤
adjust the tracking knob so that the amplitude of the radio frequency waveform becomes a maximum.

4) Set the oscilloscope trigger slope to −.

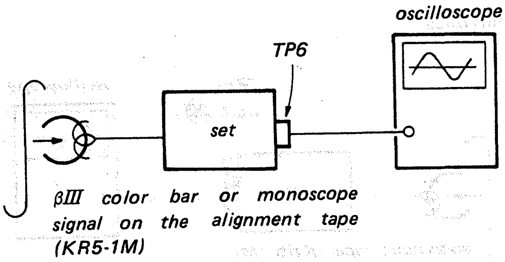
5) Adjust RV5 (PG.B) so that the time between the rising edge of the channel 1 waveform and the vertical synchronization signal on channel 2 becomes $7_H \pm 1_H$ lines.


CH-1
7H ± 1H
adjust with RV5.
CH-2
7 6 5 4 3 2 1
vertical synchronization signal

5. Drum f_H correction adjustment

[Connections]

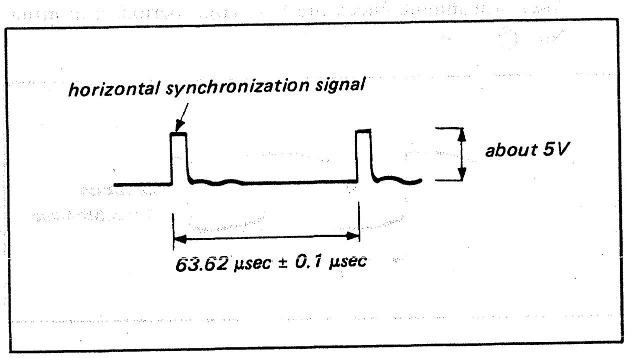
1) Picture search


oscilloscope
TP6
set
βIII color bar or monoscope signal on the alignment tape (KR5-1M)

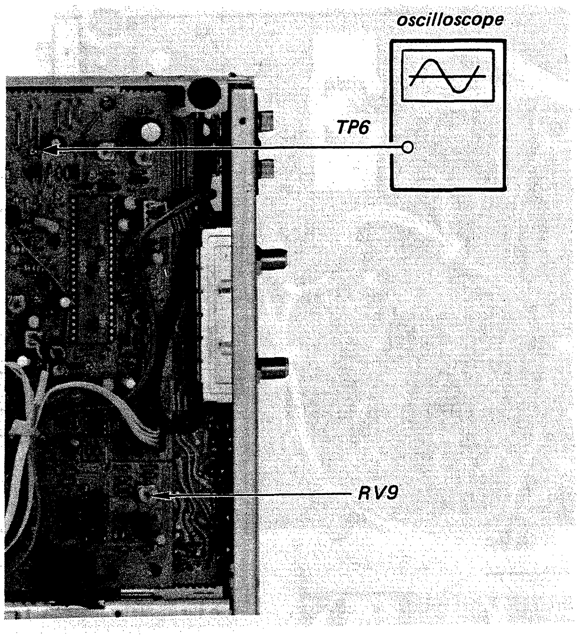
[Method of adjustment]

1) Run the set in picture search mode over the βIII color bar signal or the monoscope signal section of the alignment tape.

2) While running the picture search (◀◀: REVIEW), adjust RV9 so that the interval shown in the diagram below becomes 63.62 μsec ± 0.1 μsec.


horizontal synchronization signal
about 5V
63.62 μsec ± 0.1 μsec

[Adjustment point: servo section (SS-13 board)]

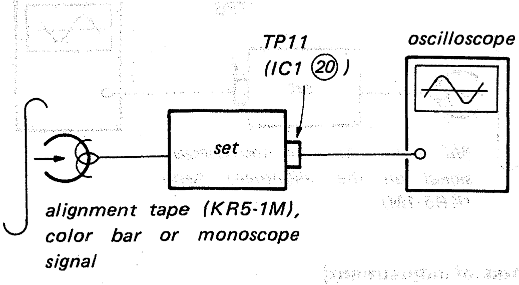

oscilloscope
TP6
RV9

5-3-2. Capstan Servo System Adjustment

1. Capstan free speed adjustment

[Connections]

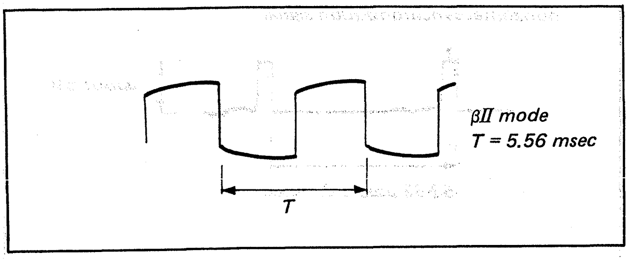
1) Playback


TP11
(IC1 ⑳)
oscilloscope
set
alignment tape (KR5-1M),
color bar or monoscope
signal

[Method of adjustment]

- βII

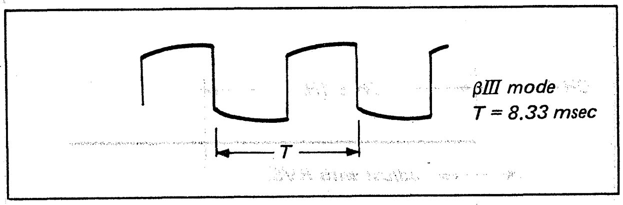
1) Play the βII color bar signal or the monoscope signal on the alignment tape.
2) Adjust RV3 so that the duty cycle of the waveform on the oscilloscope becomes 50%.
   After adjustment, check the FG signal period at terminal No. ⑰ of IC1.


βII mode
T = 5.56 msec
T

[Adjustment point: servo section (SS-13 board)]

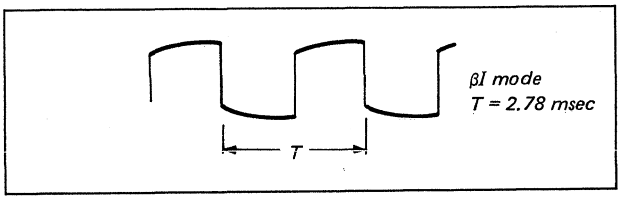
- βIII

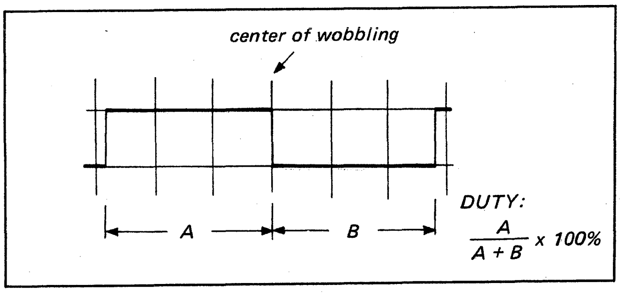
3) Play the βIII color bar signal or monoscope signal on the alignment tape.
4) Adjust RV2 so that the duty cycle of the waveform on the oscilloscope becomes 50%.
   After adjustment, check the FG signal period at terminal No. ⑰ of IC1.

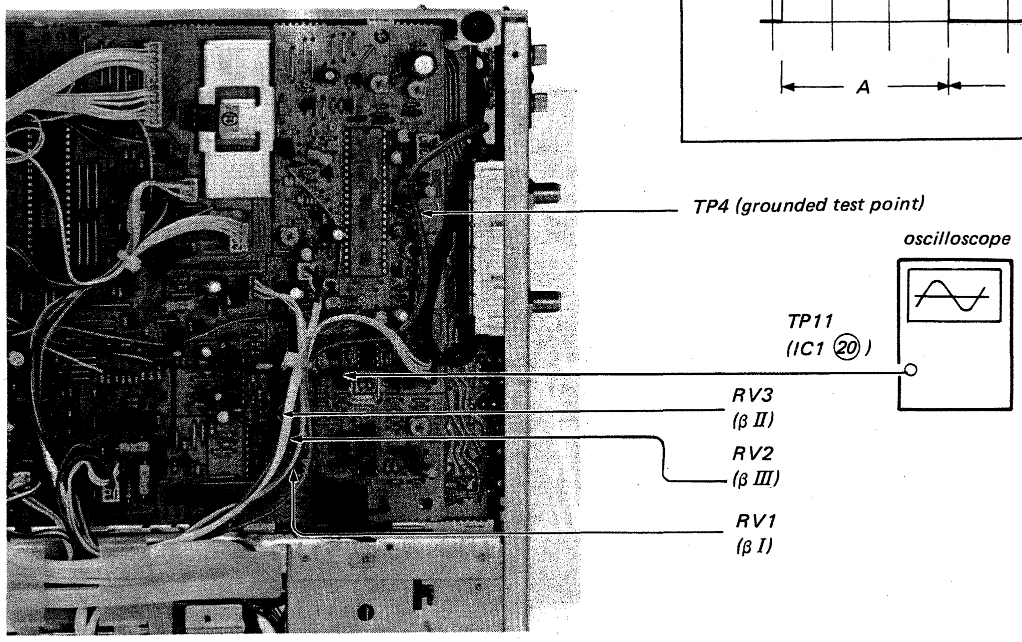

βIII mode
T = 8.33 msec
T

- βI

5) Thread the blank tape and set the unit to the REC mode. Make a connection between the 21-pin terminal (12V) and 30-pin terminal (βI MODE OUT), of IC402, and set the unit to the βI REC mode.
6) Adjust RV1 so that the duty cycle of the waveform on the oscilloscope becomes 50%.
   After adjustment, check the FG signal period at terminal No. ⑰ of IC1.


βI mode
T = 2.78 msec
T


center of wobbling
A
B
DUTY:
A/(A + B) x 100%


TP4 (grounded test point)
oscilloscope
TP11
(IC1 ⑳)
RV3
(β II)
RV2
(β III)
RV1
(β I)

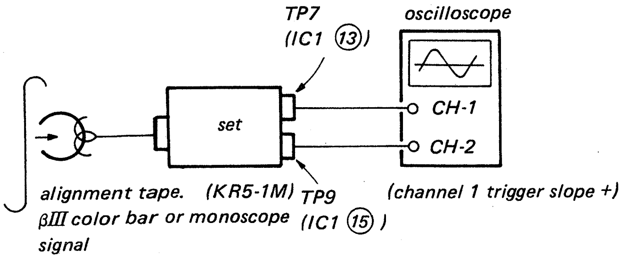
2. Tracking center adjustment

[Condition]

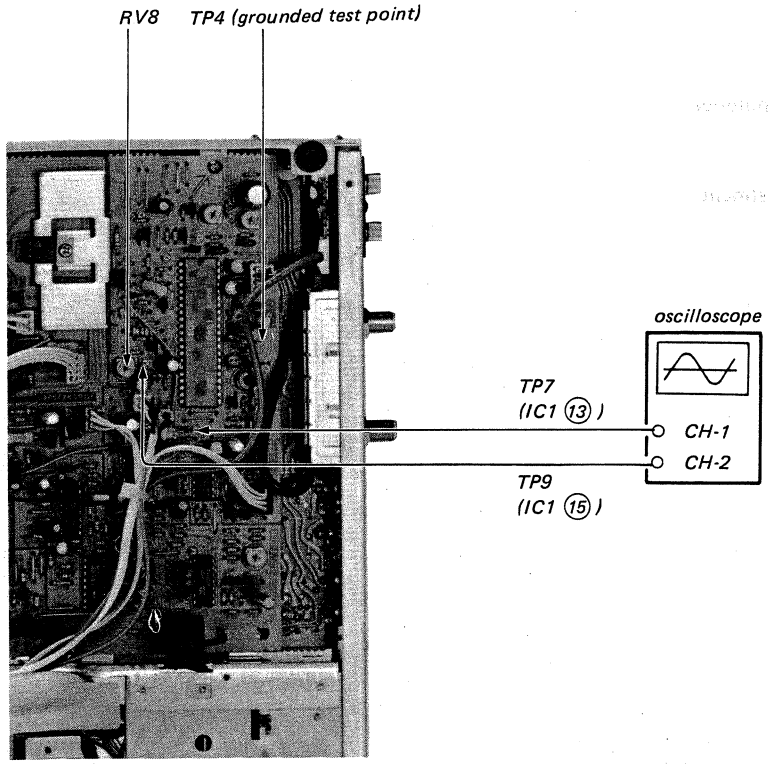
The tracking knob must be set to the center click position.

[Connections]

1) Playback

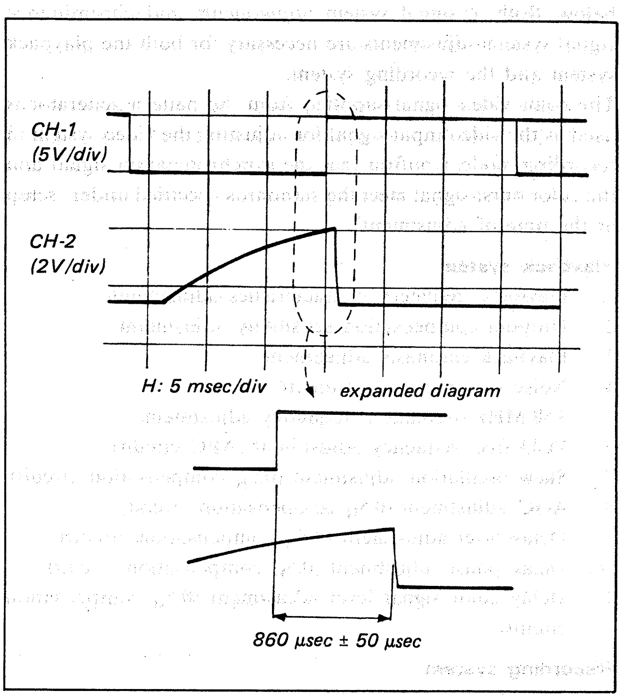

TP7
(IC1 ⑬)
oscilloscope
set
CH-1
CH-2
alignment tape. (KR5-1M)
βIII color bar or monoscope signal
TP9
(IC1 ⑮)
(channel 1 trigger slope +)

[Adjustment point: servo section (SS-13 board)]


RV8
TP4 (grounded test point)
oscilloscope
TP7
(IC1 ⑬)
CH-1
CH-2
TP9
(IC1 ⑮)

[Method of adjustment]

1) Play the βIII color bar signal or monoscope signal on the alignment tape.
2) Adjust RV8 until the interval shown in the diagram below becomes 860 μsec ± 50 μsec.


CH-1
(5V/div)
CH-2
(2V/div)
H: 5 msec/div
expanded diagram
860 μsec ± 50 μsec

5-4. VIDEO SYSTEM ADJUSTMENTS

As a rule the playback system is adjusted using the alignment tape. When it has been confirmed that the playback system is normal, the recording system is adjusted.

The order in which the adjustments are performed is given below. Both Y signal system adjustments and chrominance signal system adjustments are necessary for both the playback system and the recording system.

The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Confirm that the synchronization signal and the color burst signal meet the standards specified under "setup at the time of adjustment".

Playback system

1. Playback frequency characteristics adjustment
2. Dropout compensation sensitivity adjustment
3. Playback emphasis adjustment
4. Noise canceler II adjustment
5. 3.58 MHz oscillation frequency adjustment
6. VCO free frequency adjustment (AFC circuit)
7. Skew oscillation adjustment (0.5_H compensation circuit)
8. AGC adjustment (0.5_H compensation circuit)
9. Delay level adjustment (0.5_H compensation circuit)
10. Delay phase adjustment (0.5_H compensation circuit)
11. Delay color signal level adjustment (0.5_H compensation circuit)

Recording system

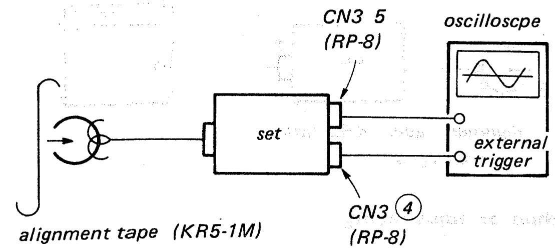
12. Peak AGC and sync AGC adjustments
13. Comb filter adjustment
14. Sync tip carrier frequency setting and FM deviation adjustment
15. 1/2 f_H shift adjustment
16. 4.27 MHz balance adjustment
17. ACC adjustment (automatic color amplitude)
18. White clip adjustment
19. Black clip adjustment
20. Brightness FM recording current adjustment
21. Color recording current adjustment

[Playback system]

1. Playback Frequency Characteristics Adjustment

[Connections]

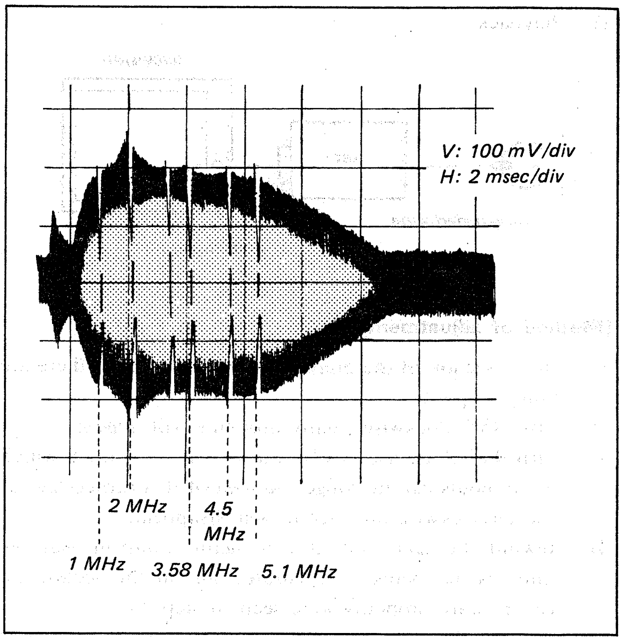
1) Playback


CN3 5
(RP-8)
oscilloscpe
set
external
trigger
CN3 ④
(RP-8)
alignment tape (KR5-1M)
RF sweep signal

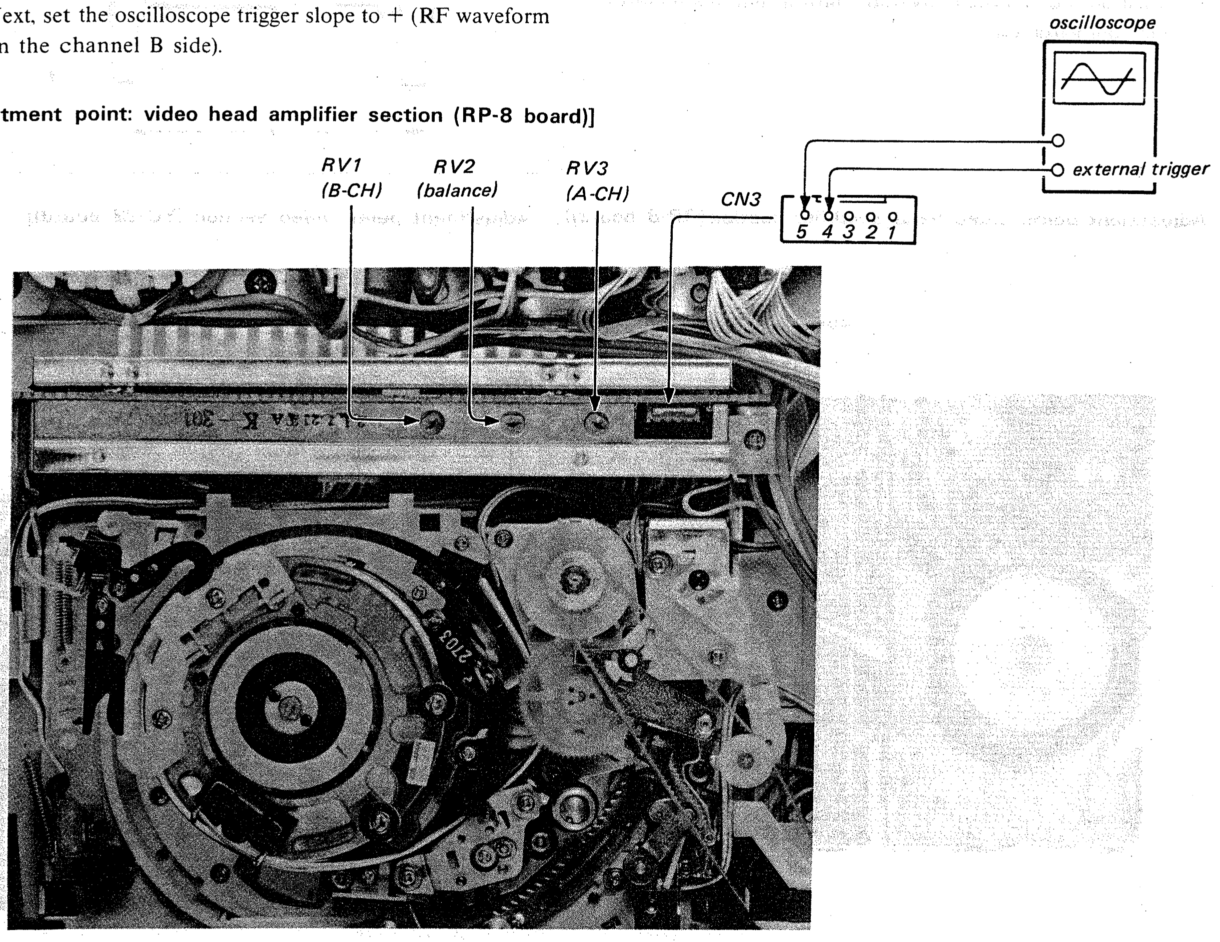
CN3⑤ : RF signal output
CN3④: RF switching pulse

[Method of adjustment]

1) Play the RF sweep signal on the alignment tape. Adjust the tracking knob until the RF signal output waveform level becomes a maximum.
2) Set the oscilloscope trigger slope to − (RF waveform on the channel A side).
3) Adjust RV3 until the RF waveform is flat in the range of 2 MHz to 4.5 MHz, and at 5.1 MHz it is only slightly below the level at 3.5 MHz.
4) Next, set the oscilloscope trigger slope to + (RF waveform on the channel B side).
5) Adjust RV1 until the RF waveform is flat from 2 MHz to 4.5 MHz, and the level at 5.1 MHz is just slightly below that at 3.58 MHz.
6) Adjust the balance using RV2 until the levels at 4.5 MHz are equal on channel A and channel B.



[Adjustment point: video head amplifier section (RP-8 board)]


RV1
(B-CH)
RV2
(balance)
RV3
(A-CH)
CN3
5 4 3 2 1
oscilloscope
external trigger

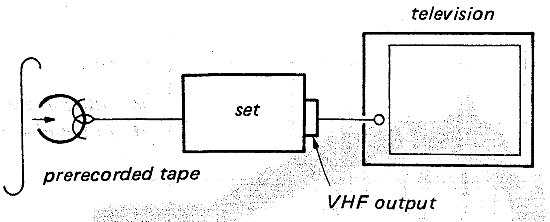
2. Dropout Compensation Sensitivity Adjustment

[Condition]

The PCM switch must be OFF.

[Connections]

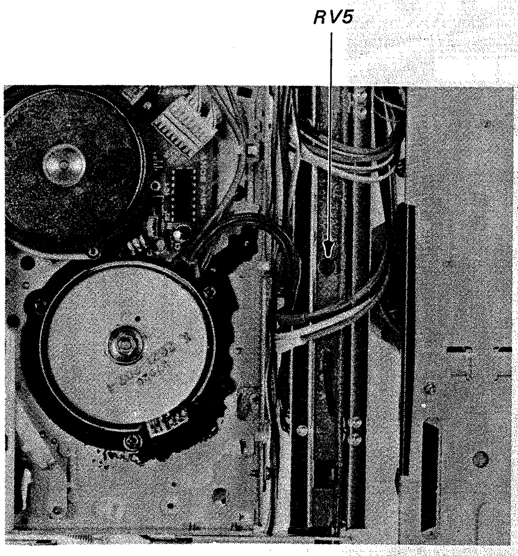
1) Playback


television
set
prerecorded tape
VHF output

[Method of adjustment]

1) Play a section of the prerecorded tape on which there are many dropouts.
2) Turn RV5 clockwise (many dropouts will appear).
3) Turn RV5 clockwise slowly and set it at the point at which the dropouts can no longer be seen (if it is turned too far counterclockwise the picture will disappear.
4) Rewind the tape and play it again. Confirm that the dropouts are being compensated for on the section on which many dropouts were seen in step 2).
5) Turn the PCM switch ON and confirm that this removes the compensation.

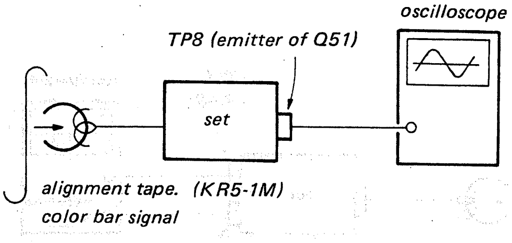
[Adjustment point: video head amplifier section(RP-8 board)]



3. Playback Emphasis Adjustment

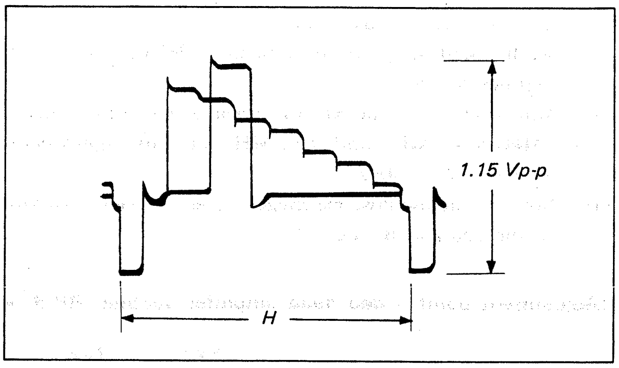
[Connections]

1) Playback

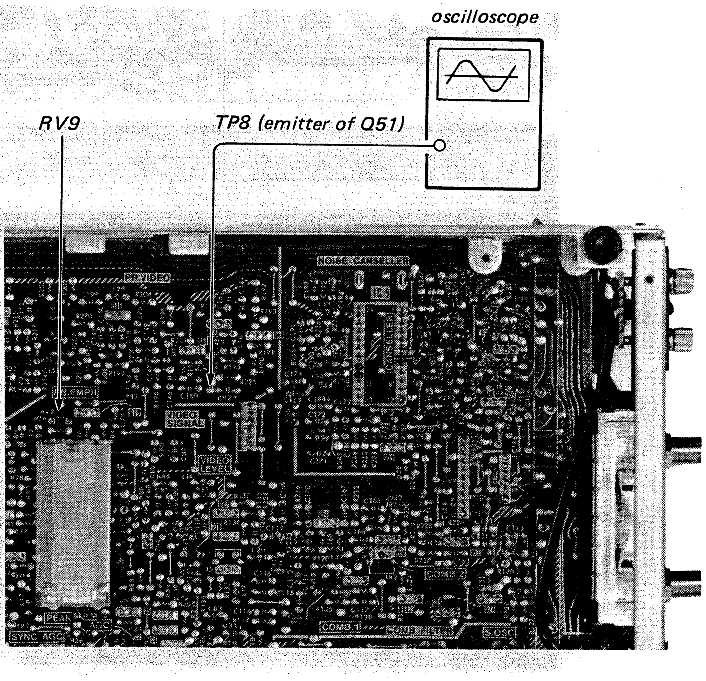

oscilloscope
TP8 (emitter of Q51)
set
alignment tape. (KR5-1M)
color bar signal

[Method of adjustment]

1) Play the color bar signal on the alignment tape.
2) Adjust the tracking knob to the position at which the tracking is best.
3) Adjust RV9 until the amplitude shown in the diagram below is 1.15 Vp-p.



[Adjustment point: video section (YC-22 board)]


oscilloscope
RV9
TP8 (emitter of Q51)

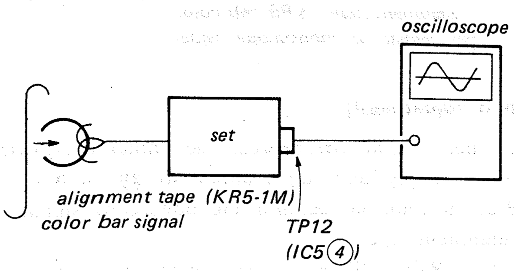
4. Noise Canceler II Adjustment

[Condition]

After this adjustment is completed, do the "playback emphasis adjustment" in section 3, then repeat the noise canceler II adjustment.

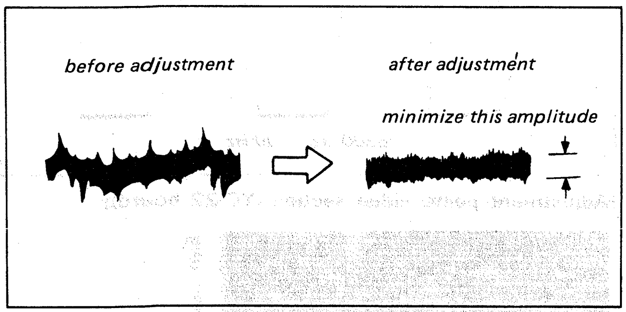
[Connections]

1) Playback

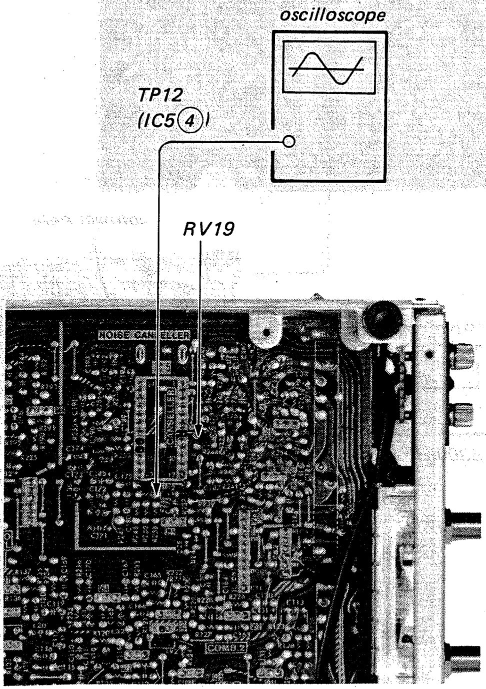

oscilloscope
set
alignment tape (KR5-1M)
color bar signal
TP12
(IC5④)

[Method of adjustment]

1) Play the color bar signal on the alignment tape.
2) Adjust RV19 until the output becomes a maximum.


before adjustment
after adjustment
minimize this amplitude

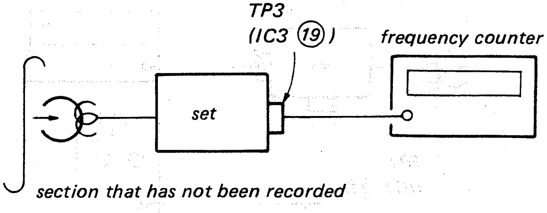
[Adjustment point: video section (YC-22 board)]


oscilloscope
TP12
(IC5④)
RV19
NOISE CANCELLER

5. 3.58 MHz Oscillation Frequency Adjustment

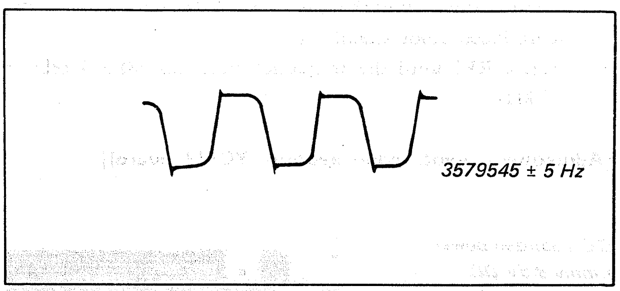
[Connections]

1) Playback

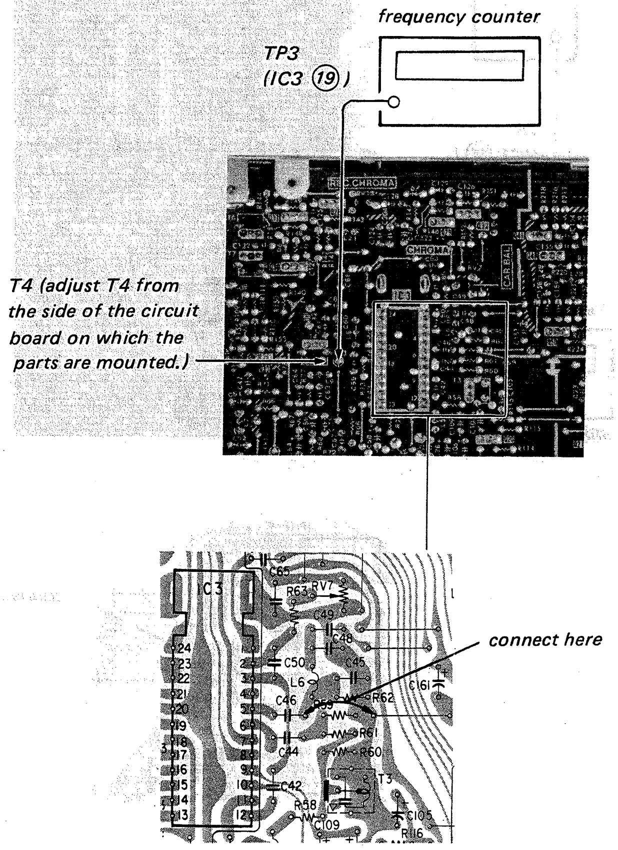

TP3
(IC3 ⑲)
frequency counter
set
section that has not been recorded

[Method of adjustment]

1) Play a tape on which nothing has been recorded (or alternatively ground the junction of C45 and C46 to cut the color signal out).
2) Adjust T4 until the frequency becomes 3579545 Hz ± 5 Hz.


3579545 ± 5 Hz

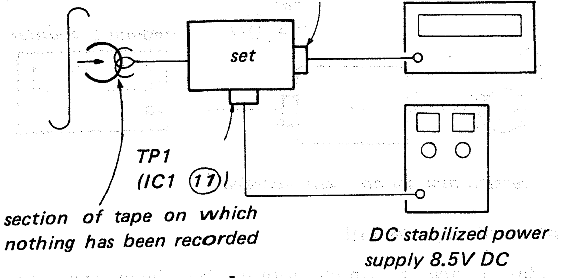
[Adjustment point: video section (YC-22 board)]


frequency counter
TP3
(IC3 ⑲)
T4 (adjust T4 from the side of the circuit board on which the parts are mounted.)
CHROMA
connect here
IC3
C65
R63
RV7
C49
C48
C50
C45
L6
C46
R59
R62
C161
R61
C44
R60
T3
C42
R58
C109
C105
R116

6. VCO Free Frequency Adjustment (AFC Circuit)

[Connections]

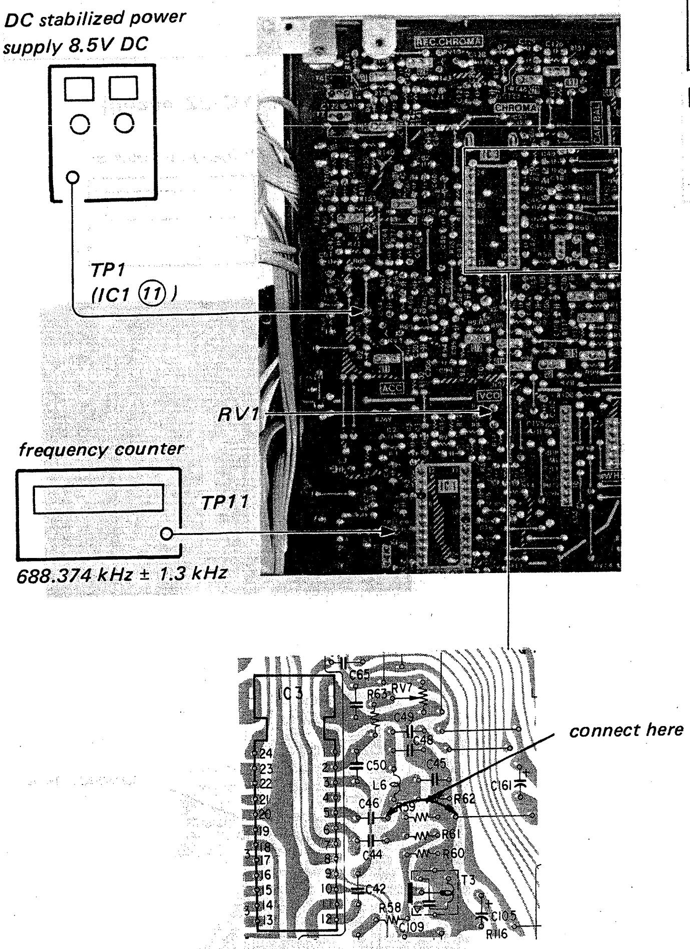
1) Playback


TP11
(junction of C9 and L1)
frequency counter
set
TP1
(IC1 ⑪)
section of tape on which nothing has been recorded
DC stabilized power supply 8.5V DC

[Method of adjustment]

1) Apply 8.5V to TP1 (terminal No.⑪ of IC1) from the DC stabilized power supply.
2) Play a tape on which nothing has been recorded (or alternatively ground the junction of C45 and C46 to cut the reproduced color signal out).
3) Adjust RV1 until the frequency becomes 688.374 kHz ± 1.3 kHz.

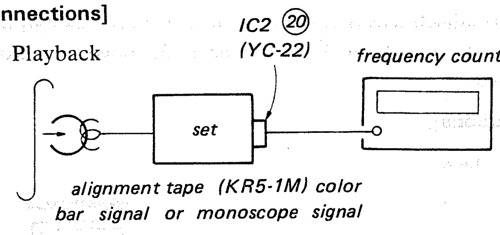
[Adjustment point: video section (YC-22 board)]


DC stabilized power supply 8.5V DC
TP1
(IC1 ⑪)
RV1
frequency counter
TP11
688.374 kHz ± 1.3 kHz
connect here
REC CHROMA
CHROMA
ACC
VCO
IC3
RV7
R63
C65
C49
C48
C45
C50
L6
C46
R59
R62
C161
R61
C44
R60
C42
R58
T3
C109
C105
R116

7. Skew Oscillation Adjustment (0.5_H Compensation Circuit)

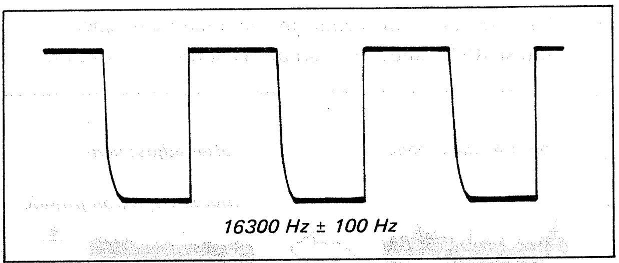
[Connections]

1) Playback

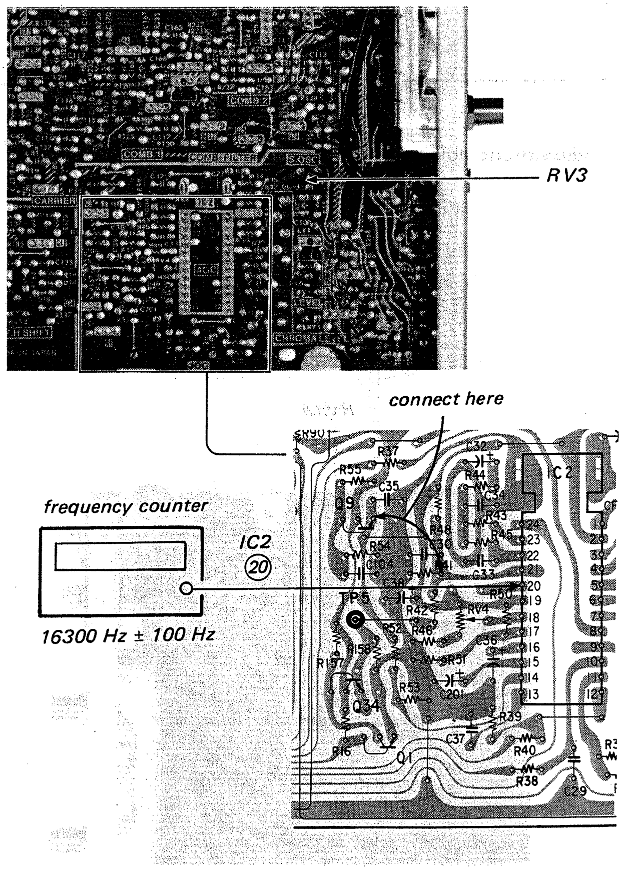

IC2 ⑳
(YC-22)
frequency counter
set
alignment tape (KR5-1M) color bar signal or monoscope signal

[Method adjustment]

1) Connect a lead wire between the emitter of Q9 (the 9V power supply line) and terminal No. ㉑ of IC2.
2) Play the color bar signal or the monoscope signal on the alignment tape.
3) Adjust RV3 until the reading on the frequency counter becomes 16.3 kHz ± 100 Hz.



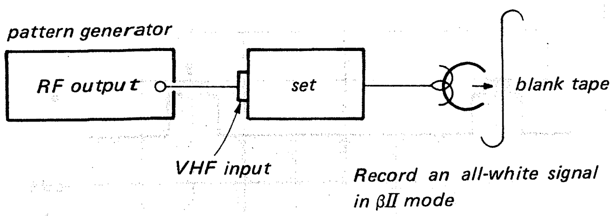
[Adjustment point: video section (YC-22 board)]


RV3
COMB 1
COMB FILTER
S.OSC
CARRIER
connect here
frequency counter
IC2
⑳
16300 Hz ± 100 Hz
R37
R55
C35
C32
R44
IC2
Q9
R48
R43
R45
R54
C33
TP5
R50
R42
RV4
R46
R52
C36
R158
R157
SR51
R53
C201
R39
Q34
C37
R16
Q1
R40
R38
C29

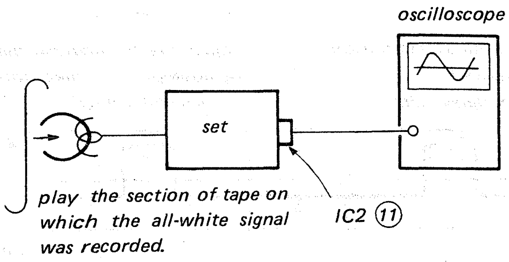
8. AGC Adjustment (0.5$_H$ Compensation Circuit)

[Connections]

1) Recording

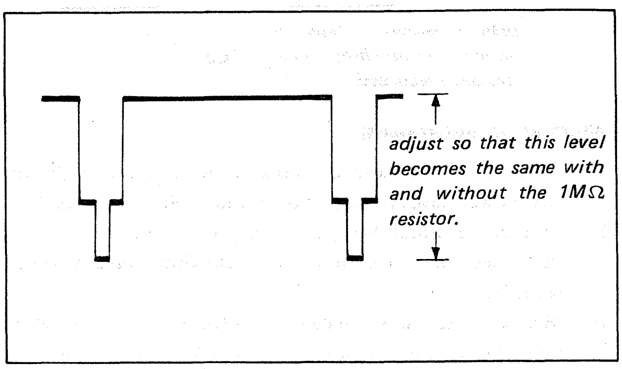

pattern generator
RF output
set
blank tape
VHF input
Record an all-white signal in βII mode

2) Playback

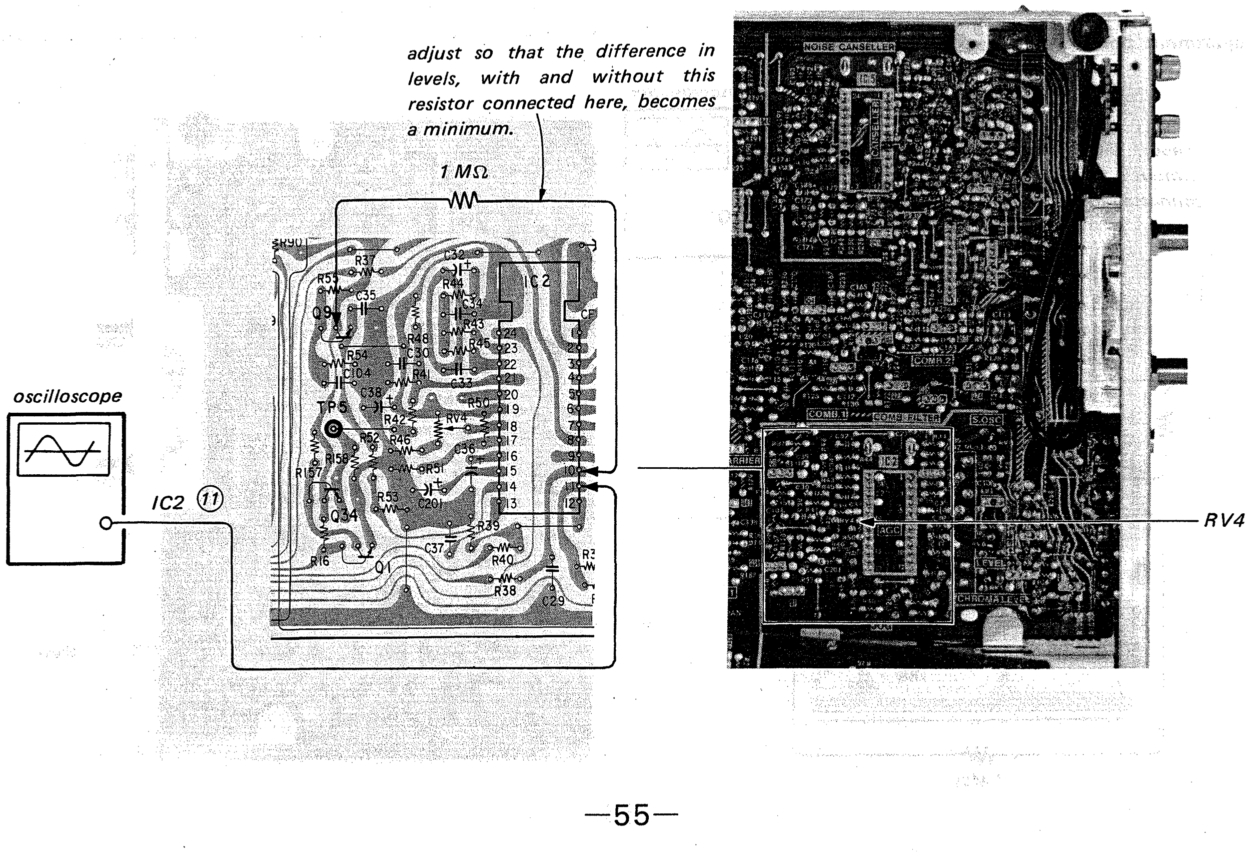

oscilloscope
set
play the section of tape on which the all-white signal was recorded.
IC2 ⑪

[Method of adjustment]

1) Record an all-white signal in βII mode to produce a tape with all white recorded on it.
2) Play back the section of tape on which the all-white signal was recorded.
3) Adjust RV4 until the difference in levels of the amplitude shown in the diagram below, with and without a 1 MΩ resistor connected between the collector of Q9 (the 12V power supply line) and terminal No. ⑩ of IC2 becomes a minimum (0.02V or less).


adjust so that this level becomes the same with and without the 1MΩ resistor.

[Adjustment point: video section (YC-22 board)]


adjust so that the difference in levels, with and without this resistor connected here, becomes a minimum.
1 MΩ
oscilloscope
IC2 ⑪
IC2
Q9
TP5
RV4
R37
R44
C32
C34
C35
R43
R45
R48
C30
R54
C104
R41
C33
C38
R50
R42
R46
R52
R158
R157
C36
R51
R53
C201
Q34
R39
C37
R16
Q1
R40
R38
C29
NOISE CANSELLER
COMB. FILTER
S.OSC
AGC
CHROMA LEVEL
RV4

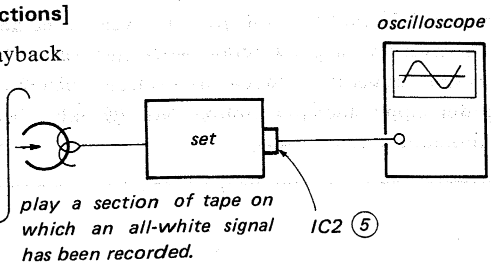
9. Delay Level Adjustment (0.5$_H$ Compensation Circuit)

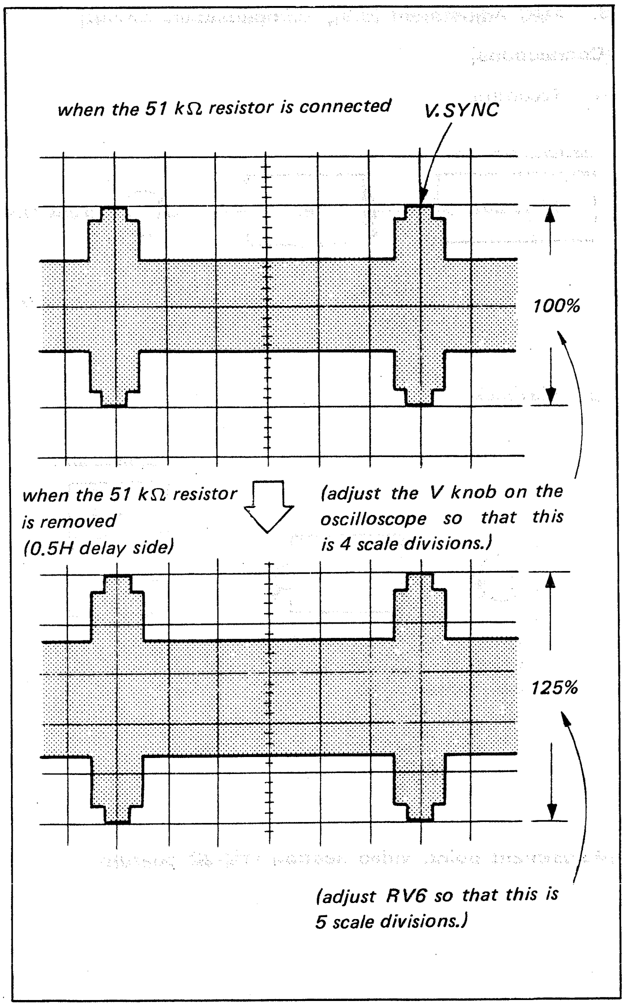
[Condition]

Adjustments 9 through 11 must be done twice, in the order 9 — 10 — 11 — 9 — 10 — 11.

[Connections]

1) Playback

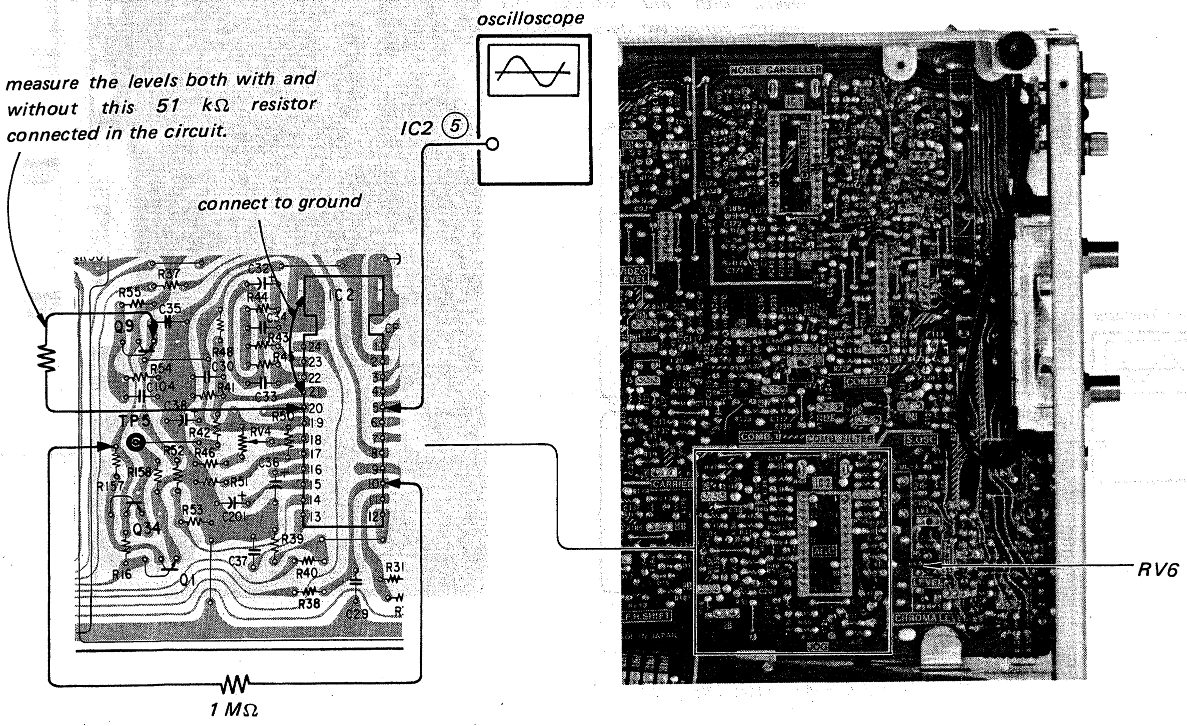

oscilloscope
set
play a section of tape on which an all-white signal has been recorded.
IC2 ⑤


when the 51 kΩ resistor is connected
V.SYNC
100%
when the 51 kΩ resistor is removed (0.5H delay side)
(adjust the V knob on the oscilloscope so that this is 4 scale divisions.)
125%
(adjust RV6 so that this is 5 scale divisions.)

[Method of adjustment]

1) Connect a 1 MΩ resistor between the collector of Q9 (the 12V power supply line) and terminal No. ⑩ of IC2.
2) Connect terminal No. ㉑ of IC2 to ground.
3) Play a section of tape on which an all-white signal has been recorded.
4) Measure the peak-to-peak amplitudes (see diagram at right) both with and without a 51 kΩ resistor connected between the emitter of Q9 (the 9V power supply line) and terminal No. ⑳ of IC2.
5) Adjust RV6 so that the amplitude measured without the 51 kΩ resistor in the circuit is 1.25 times that measured with the resistor in the circuit. A convenient way to do this is by adjusting the V knob on the oscilloscope so that the peak value at the V. SYNC position is 4 scale divisions; then with the resistor removed it should be 5 scale divisions.

[Adjustment point: video section (YC-22 board)]


oscilloscope
measure the levels both with and without this 51 kΩ resistor connected in the circuit.
IC2 ⑤
connect to ground
IC2
Q9
TP5
RV4
Q34
Q1
1 MΩ
NOISE CANSELLER
VIDEO LEVEL
COMB.1
COMB FILTER
S.OSC
CARRIER
AGC
LEVEL
CHROMA LEVEL
JOG
RV6

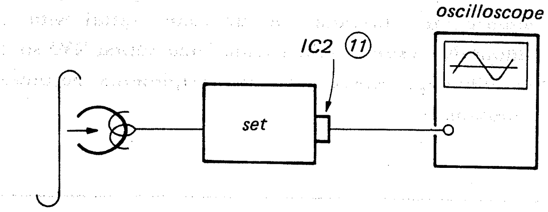
10. Delay Phase Adjustment (0.5_H Compensation Circuit)

[Condition]

Adjustments 9 through 11 must be done twice, in the order 9 — 10 — 11 — 9 — 10 — 11.

[Connections]

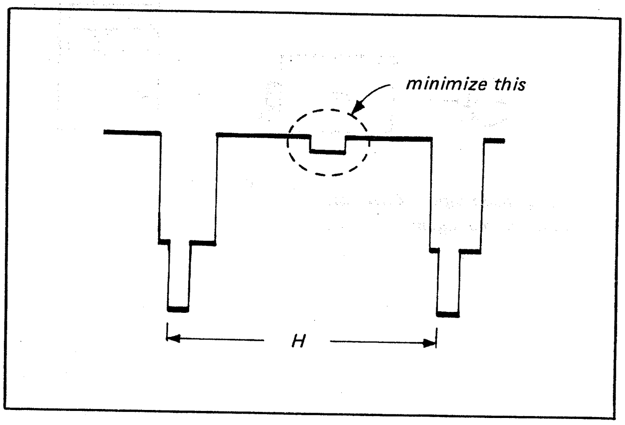
1) Playback


oscilloscope
IC2 ⑪
set

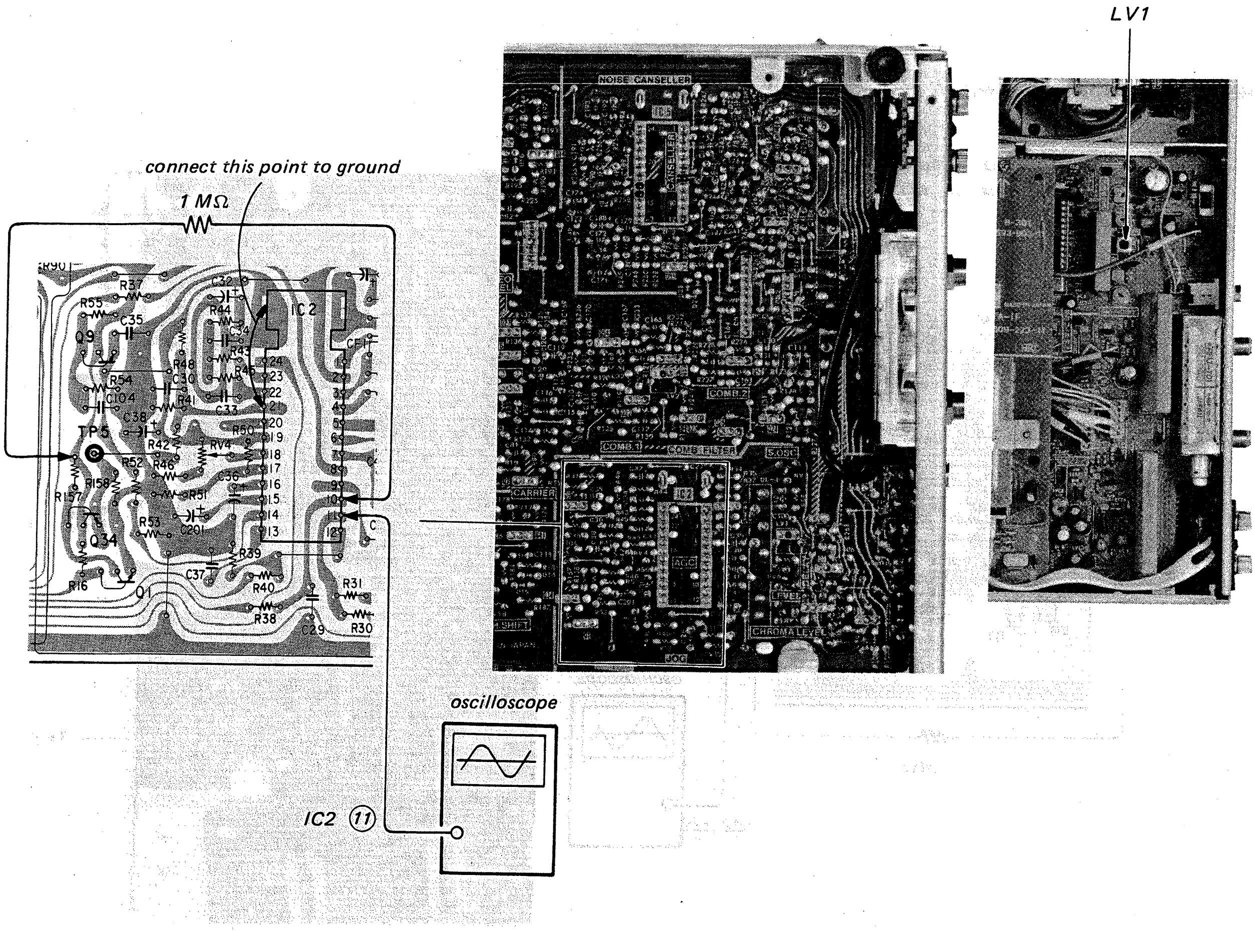
play a section of tape on which an all-white signal has been recorded.

[Method of adjustment]

1) Connect a 1 MΩ resistor between the collector of Q9 (12V power supply line) and terminal No. ⑩ of IC2.
2) Connect terminal No. ㉑ of IC2 to ground.
3) Play a section of tape on which an all-white signal has been recorded.
4) Adjust LV1 so that the fuzziness due to the horizontal synchronization signal that appears in the central part of the waveform becomes a minimum.


minimize this
H

[Adjustment point: video section (YC-22 board)]


LV1
connect this point to ground
1 MΩ
IC2
Q9
TP5
Q34
RV4
oscilloscope
IC2 ⑪

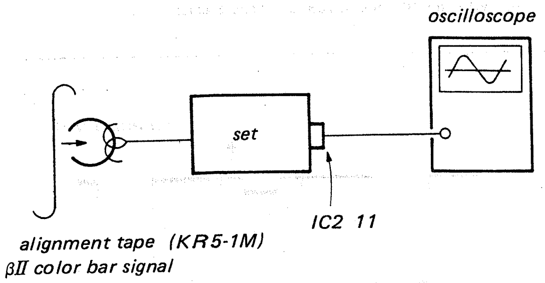
11. Delay Color Signal Level Adjustment (0.5$_H$ Compensation Circuit)

[Condition]

Adjustments 9 through 11 must be done twice, in the order 9 — 10 — 11 — 9 — 10 — 11.

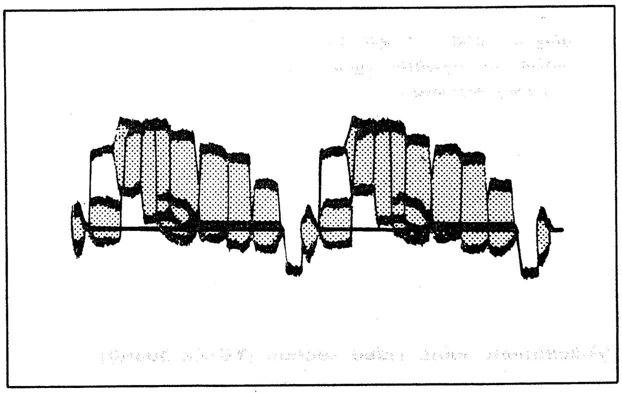
[Connections]

1) Playback

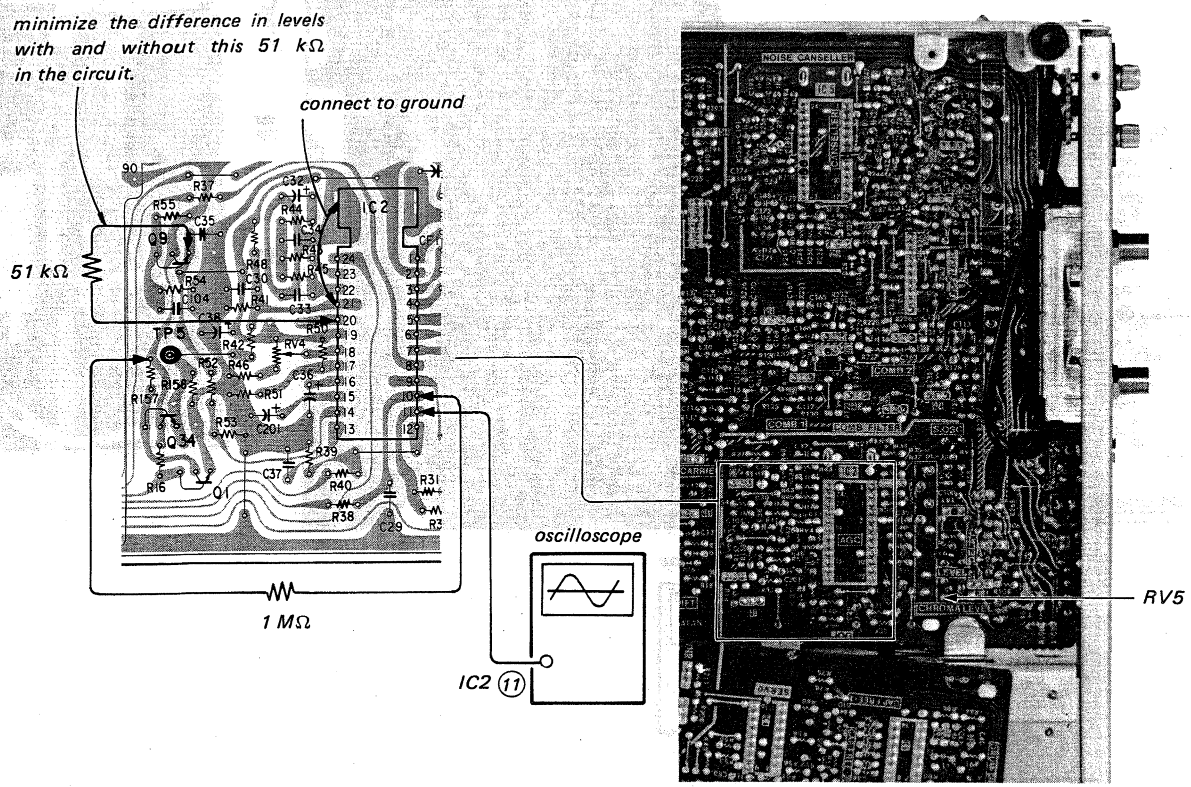

oscilloscope
set
IC2 11
alignment tape (KR5-1M)
βII color bar signal

[Method of adjustment]

1) Connect a 1 MΩ resistor between the collector of Q9 (the 12V power supply line) and terminal No. ⑩ of IC2.
2) Connect terminal No. ㉑ of IC2 to ground.
3) Play the βII color bar signal on the alignment tape.
4) Connect a 51 kΩ resistor between the emitter of Q9 (the 9V power supply line) and terminal No. ⑳ of IC2, and measure the amplitudes of the color signal with and without this resistor in the circuit. Then adjust RV5 so that the difference between the two amplitudes becomes a minimum.



[Adjustment point: video section (YC-22 board)]

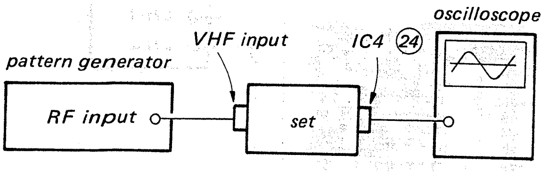

minimize the difference in levels with and without this 51 kΩ in the circuit.
connect to ground
51 kΩ
1 MΩ
IC2
Q9
TP5
RV4
Q34
Q1
oscilloscope
IC2 ⑪
RV5
NOISE CANSELLER
COMB FILTER
CHROMA LEVEL

[Recording system]

12. Peak AGC and Sync AGC Adjustments

[Connections]

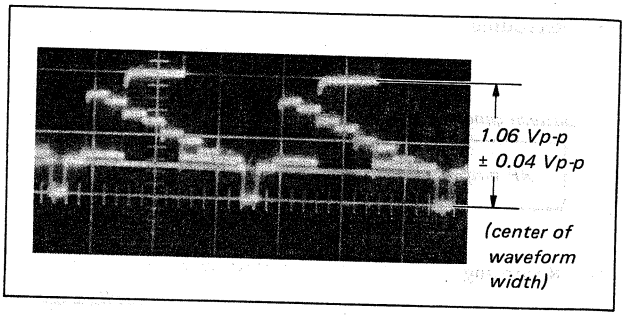
1) E-E mode



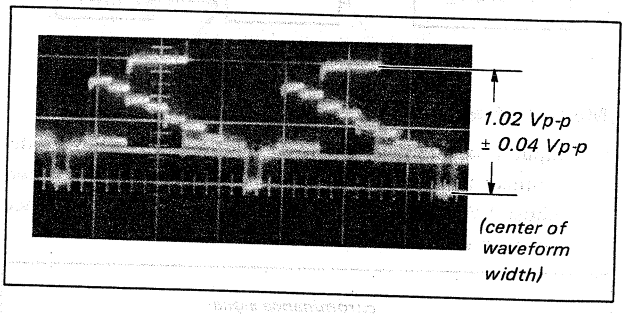
oscilloscope
VHF input
IC4 ㉔
pattern generator
RF input
set

[Method of adjustment]

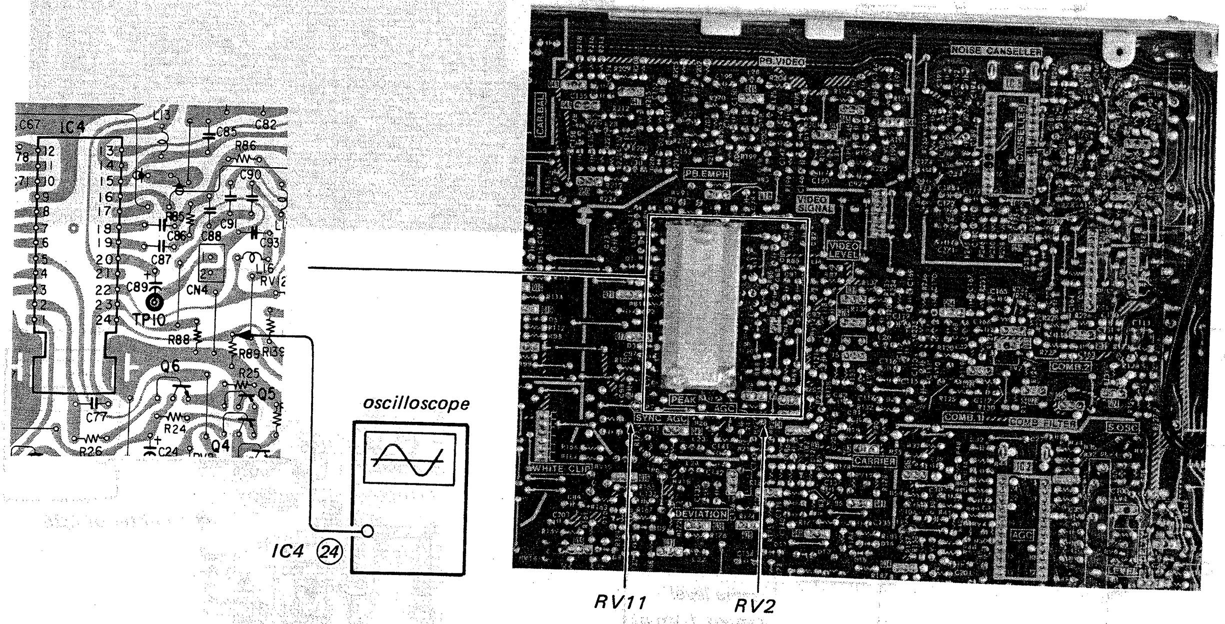
1) Supply a color bar signal with the chrominance signal removed (in other words a black-and-white signal) from the pattern generator.
2) Turn RV11 counterclockwise until the level shown in the figure at the right is a maximum.
3) Adjust RV2 (the peak AGC) until the level becomes 1.06 Vp-p ± 0.04 Vp-p.



4) Adjust RV11 (the sync AGC) until the level becomes 1.02 Vp-p ± 0.04 Vp-p.



[Adjustment point: video section (YC-22 board)]



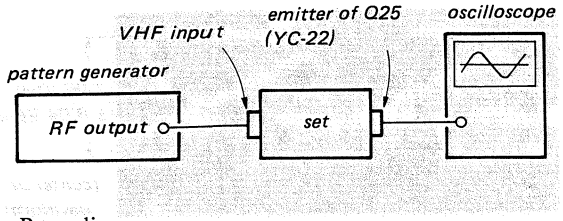
IC4
TP10
RV2
oscilloscope
IC4 ㉔
RV11
RV2

13. Comb Filter Adjustment

[Adjustment point: video section (YC-22 board)]

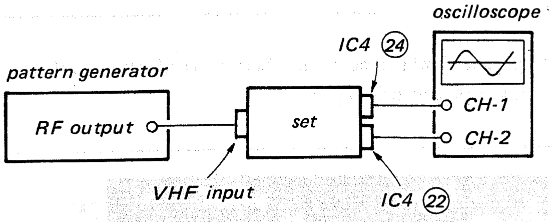
[Connections]

1) Recording



emitter of Q25
(YC-22)
oscilloscope
VHF input
pattern generator
RF output
set

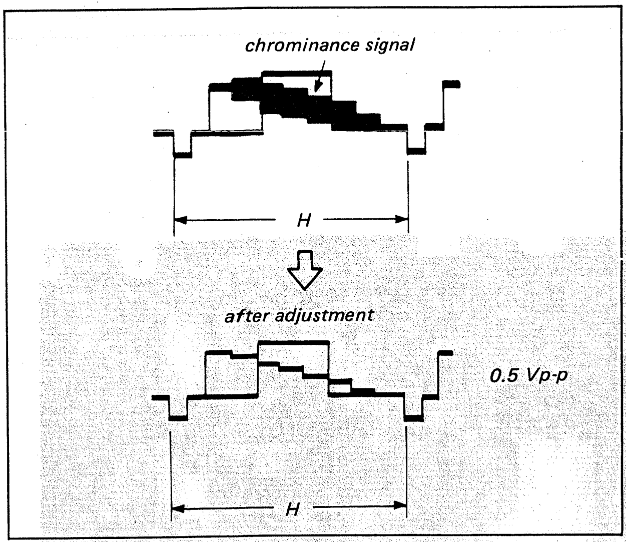
2) Recording



oscilloscope
IC4 ㉔
pattern generator
RF output
set
CH-1
CH-2
VHF input
IC4 ㉒

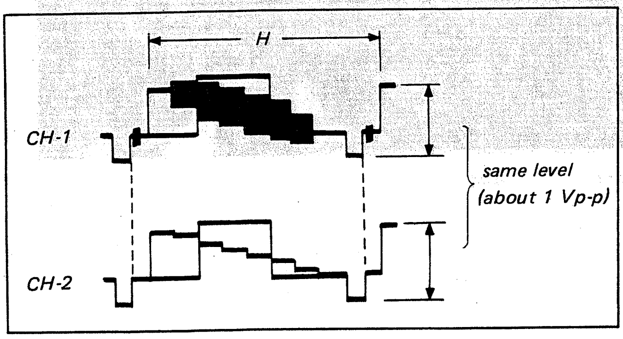
[Method of adjustment]

1) Input a color bar signal and put the set in recording mode.
2) Connect the oscilloscope to the emitter of Q25 and then adjust LV2 and RV10 alternately until the chrominance signal is a minimum.

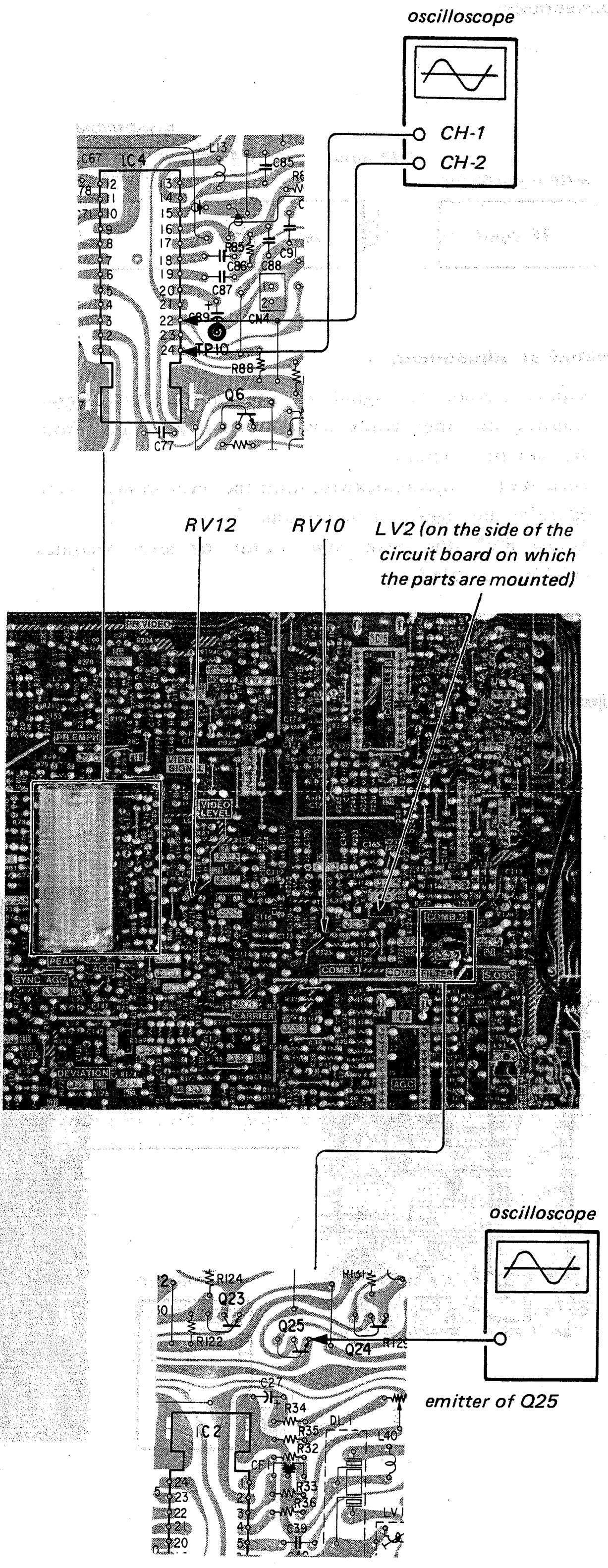


chrominance signal
H
after adjustment
0.5 Vp-p
H

3) Adjust RV12 until the video signal levels at terminal No. ㉔ of IC4 and terminal No. ㉒ of IC4 are equal (video amplitude adjustment).



H
CH-1
CH-2
same level
(about 1 Vp-p)

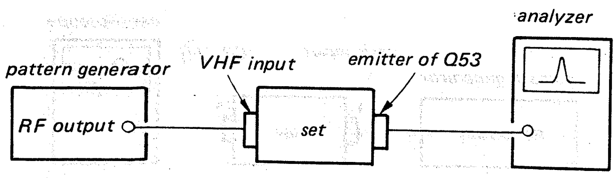


oscilloscope
CH-1
CH-2
IC4
TP10
RV12
RV10
L V2 (on the side of the circuit board on which the parts are mounted)
oscilloscope
Q25
Q24
Q23
IC2
emitter of Q25

14. Sync Tip Carrier Frequency Setting and FM Deviation Adjustment

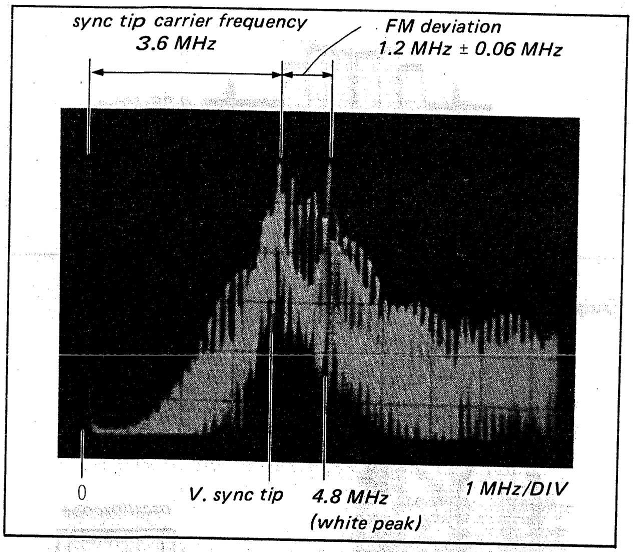
[Connections]

1) E-E mode

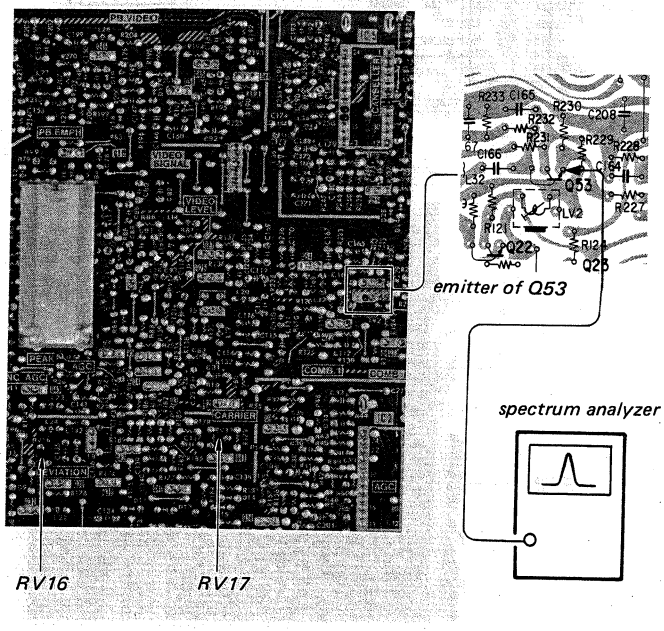

spectrum analyzer
pattern generator
VHF input
emitter of Q53
RF output
set

[Method of adjustment]

1) Supply a color bar signal, and put the set into E-E (direct picture) mode.
2) Observe the frequency distribution, and adjust RV17 and RV16 alternately until the sync tip carrier frequency and FM deviation fall within their respective standard ranges.



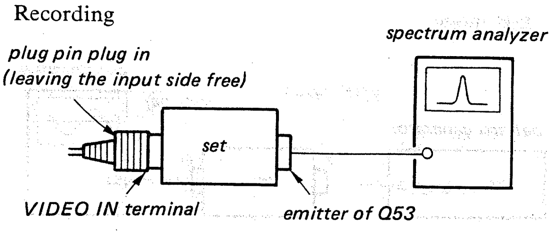
[Adjustment point: video section (YC-22 board)]


PB VIDEO
PB EMPH
VIDEO SIGNAL
VIDEO LEVEL
COMB 1
CARRIER
DEVIATION
R233
C165
R230
C208
R232
R231
R229
R228
C166
L32
C164
Q53
LV2
R227
R121
Q22
R124
Q23
emitter of Q53
spectrum analyzer
RV16
RV17

15. 1/2 f_H Shift Adjustment

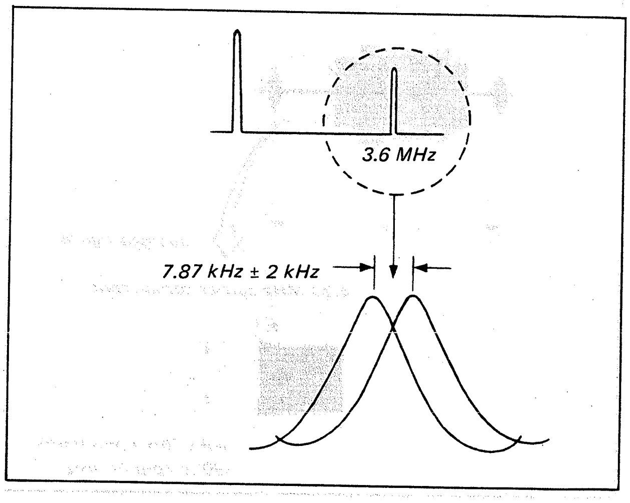
[Connections]

1) Recording

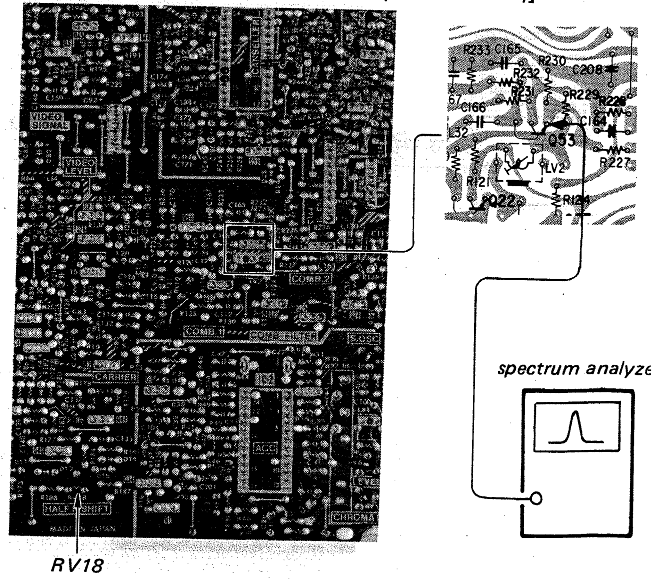

spectrum analyzer
plug pin plug in
(leaving the input side free)
set
VIDEO IN terminal
emitter of Q53

[Method of adjustment]

1) Plug a pin plug into the video input terminal (leaving the input side of the plug free), and put the set into recording mode without any signal input.
2) Adjust RV18 until the shift of the FM wave comes to 7.87 kHz ± 2 kHz.


3.6 MHz
7.87 kHz ± 2 kHz

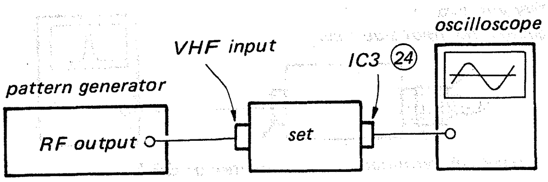
[Adjustment point: video section (YC-22 board)]


VIDEO SIGNAL
VIDEO LEVEL
COMB 2
COMB 1
COMB FILTER
CARRIER
AGC
HALF SHIFT
CHROMA
MADE IN JAPAN
R233
C165
R230
C208
R232
R231
R229
C166
L32
C164
Q53
LV2
R227
R121
Q22
R124
spectrum analyze
RV18

16. 4.27 MHz Balance Adjustment

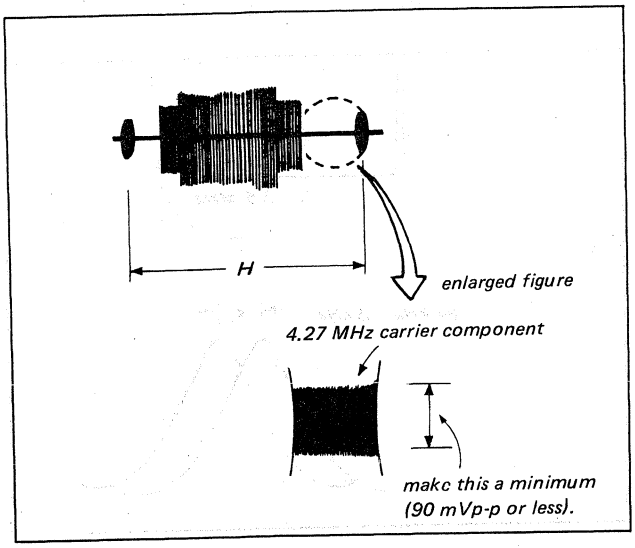
[Connections]

1) E-E mode

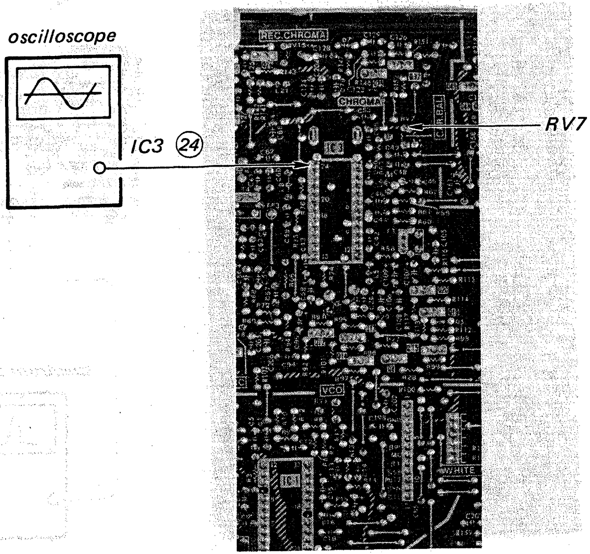

oscilloscope
VHF input
IC3 ㉔
pattern generator
RF output
set

[Method of adjustment]

1) Supply a color bar signal, and put the set into E-E (direct picture) mode.
2) Adjust RV7 until the amplitude of the 4.27 MHz component is a minimum.


H
enlarged figure
4.27 MHz carrier component
make this a minimum
(90 mVp-p or less).

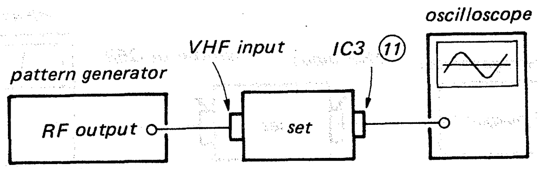
[Adjustment point: video section (YC-22 board)]


oscilloscope
IC3 ㉔
RV7

17. ACC Adjustment

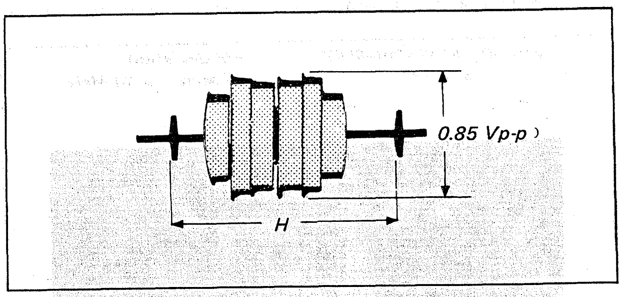
[Connections]

1) E-E mode

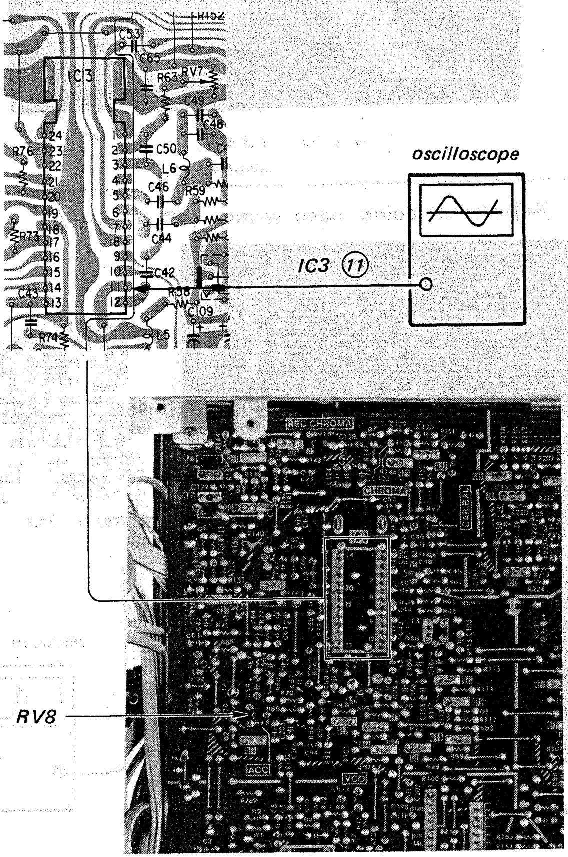

oscilloscope
VHF input
IC3 ⑪
pattern generator
RF output
set

[Method of adjustment]

1) Supply a color bar signal, and put the set into E-E (direct picture) mode.
2) Adjust RV8 until the chrominance level is 0.85 Vp-p ± 0.05 Vp-p.



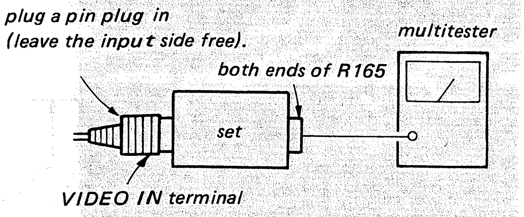
[Adjustment point: video section (YC-22 board)]


IC3
RV7
oscilloscope
IC3 ⑪
RV8

18. White Clip Adjustment

[Connections]

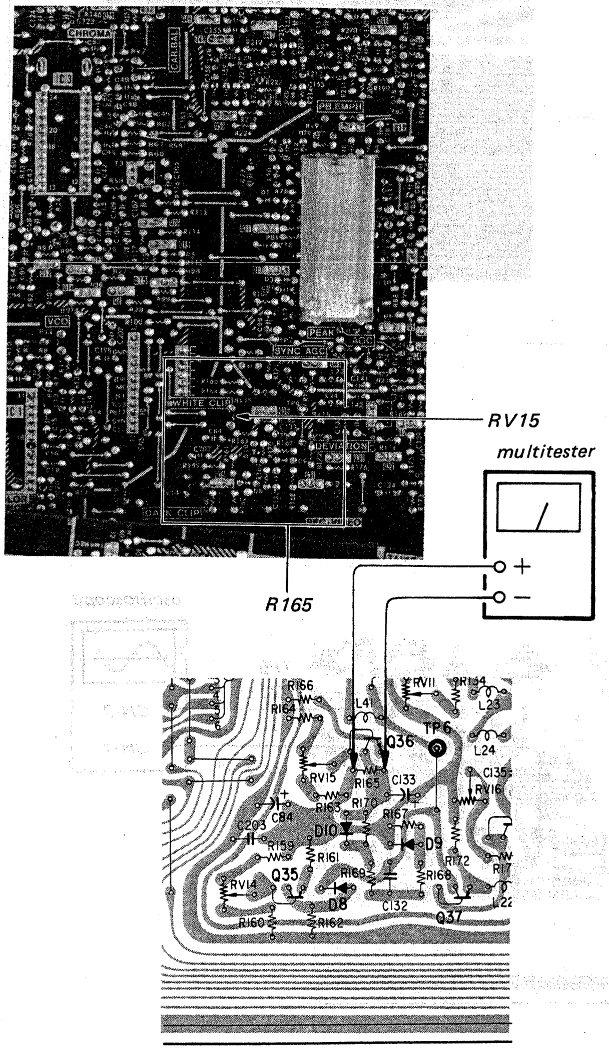
1) E-E mode


plug a pin plug in
(leave the input side free).
multitester
both ends of R165
set
VIDEO IN terminal

[Method of adjustment]

1) Plug a pin plug in to the video input terminal (leave the input side of the plug free), so that there is no signal input.
2) Adjust RV15 so that the voltage at both ends of R165 is 0.20V ± 0.05V.

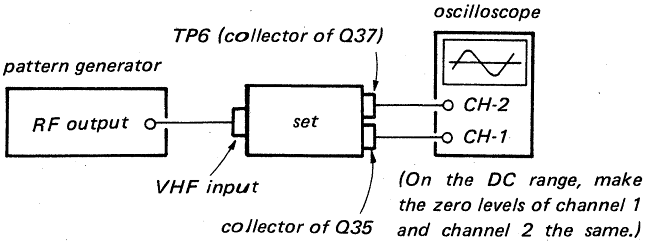
[Adjustment point: video section (YC-22 board)]

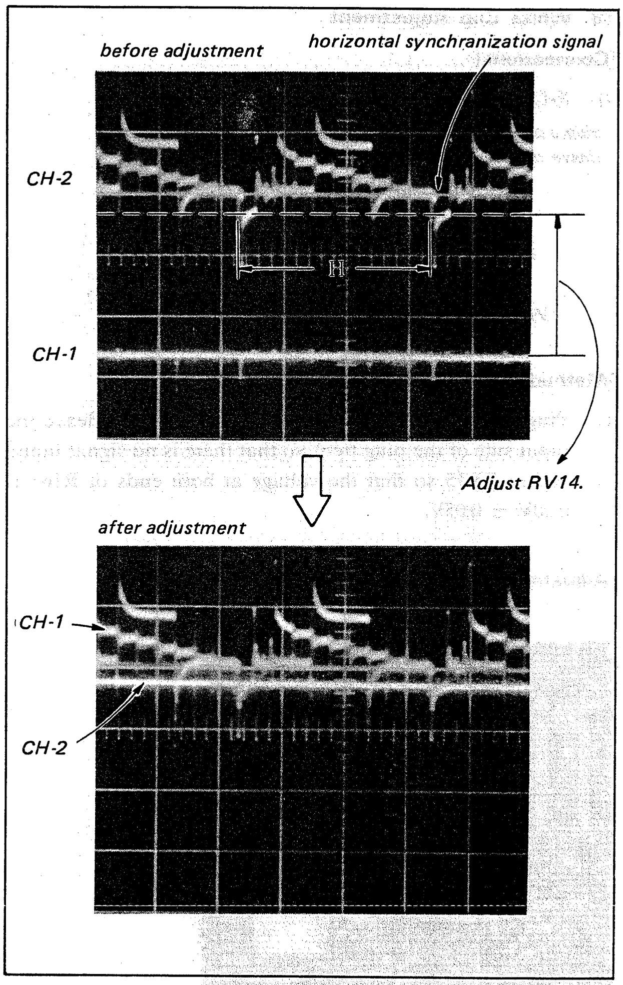

CHROMA
CAR BAL
PB EMPH
VCO
PEAK
AGC
SYNC AGC
WHITE CLIP
DEVIATION
DARK CLIP
RV15
multitester
+
−
R165
R166
R164
RV11
R134
L23
L41
Q36
TP6
L24
RV15
R165
C133
C135
RV16
R163
R170
C84
C203
D10
R167
D9
R159
R161
R172
Q35
R169
R168
RV14
D8
C132
Q37
R160
R162

19. Black Clip Adjustment

[Connections]

1) E-E mode

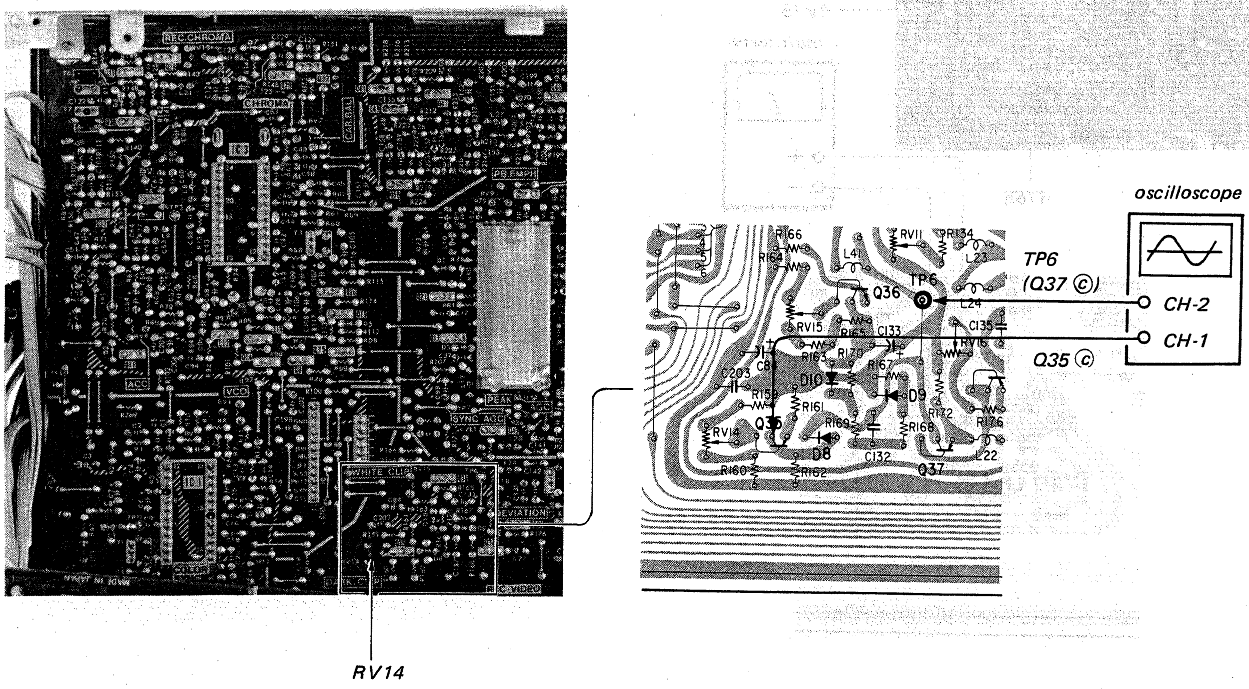

oscilloscope
TP6 (collector of Q37)
pattern generator
RF output
set
CH-2
CH-1
VHF input
collector of Q35
(On the DC range, make the zero levels of channel 1 and channel 2 the same.)


before adjustment
horizontal synchranization signal
CH-2
H
CH-1
Adjust RV14.
after adjustment
CH-1
CH-2

[Method of adjustment]

1) Put the oscilloscope on the DC range, and make zero levels of channel 1 and channel 2 equal to each other.
2) Supply a color bar signal, and put the set into E-E (direct picture) mode.
3) Adjust RV14 so that the voltage at the tip of the horizontal synchronization signal in the waveform on channel 2 equals the DC voltage on channel 1 (the tip of the synchronization signal should be within ±50 mV).

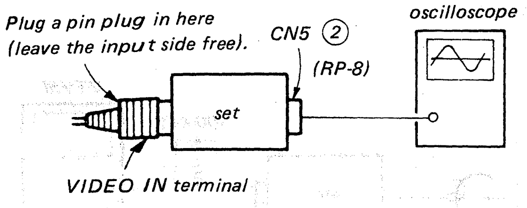
[Adjustment point: video section (YC-22 board)]


REC CHROMA
CHROMA
CAR BAL
PB EMPH
ACC
VCO
PEAK
SYNC AGC
WHITE CLIP
DEVIATION
REC VIDEO
RV14
oscilloscope
TP6
(Q37 ©)
CH-2
CH-1
Q35 ©
R166
R164
RV11
R134
L41
L23
Q36
TP6
L24
RV15
R165
C133
C135
RV16
R163
R170
R167
C203
C81
D10
D9
R159
R161
R172
RV14
Q35
R169
R168
R176
D8
C132
L22
R160
R162
Q37

20. Brightness FM Recording Current Adjustment

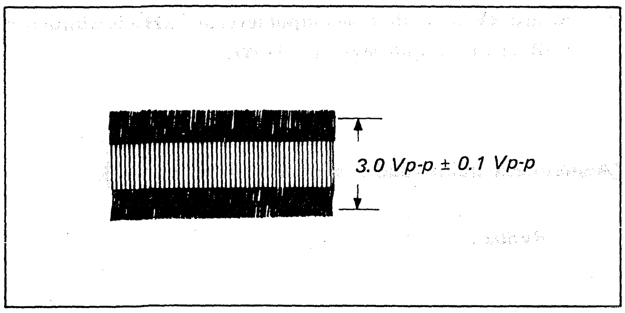
[Connections]

1) Recording

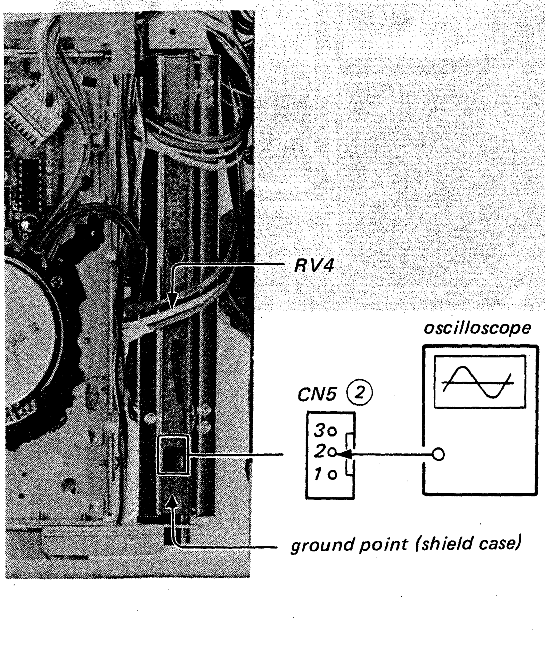

Plug a pin plug in here (leave the input side free).
CN5 ②
(RP-8)
oscilloscope
set
VIDEO IN terminal

[Method of adjustment]

1) Plug a pin plug in to the video input terminal (leaving the input side of the plug free) so that there is no input signal, and put the set into recording mode.
2) Adjust RV4 until the amplitude shown in the diagram below is 3.0 Vp-p ± 0.1 Vp-p.


3.0 Vp-p ± 0.1 Vp-p

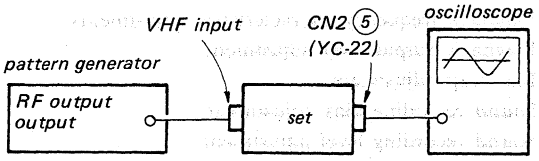
[Adjustment point: video head amplifier section (RP-8 board)]


RV4
oscilloscope
CN5 ②
3o
2o
1o
ground point (shield case)

21. Color Recording Current Adjustment

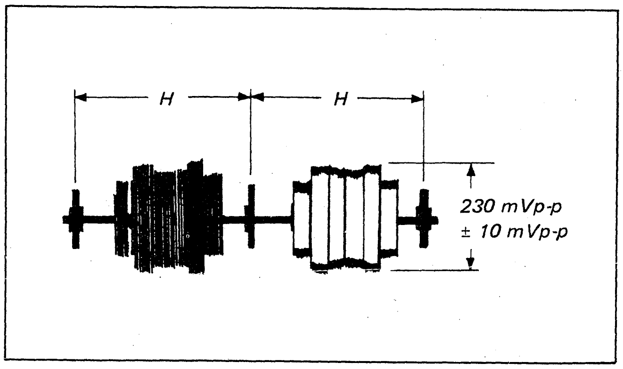
[Connections]

1) E-E mode

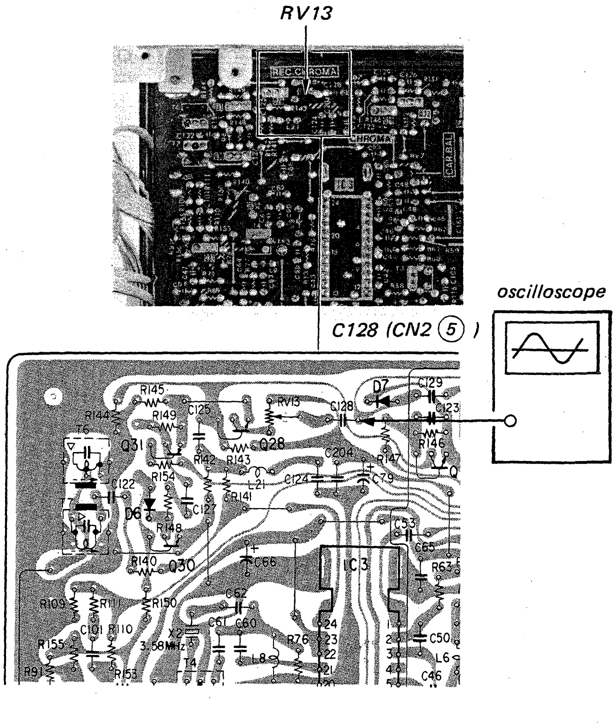

VHF input
CN2 ⑤
(YC-22)
oscilloscope
pattern generator
RF output
output
set

[Method of adjustment]

1) Supply a color bar signal and put the set in E-E (direct picture) mode.
2) Adjust RV13 until the amplitude shown in the diagram below is 230 mVp-p ± 10 mVp-p.


H
H
230 mVp-p
± 10 mVp-p

[Adjustment point: video section (YC-22 board)]


RV13
oscilloscope
C128 (CN2 ⑤)
REC CHROMA
RV13
C128
Q28
Q30
Q31
IC3
D6
D7
3.58MHz

5-5. AUDIO SYSTEM ADJUSTMENTS

Use a dynamicron tape to perform these adjustments.

Sequence of adjustments

1. ACE head adjustment... refer to the description of mechanical section adjustments.
2. Playback frequency characteristics adjustments
3. Playback output level adjustment
4. Bias trap adjustment
5. Sound recording bias adjustment
6. Sound recording level adjustment
7. Overall level check
8. Overall distortion rate check
9. Overall signal-to-noise ratio check

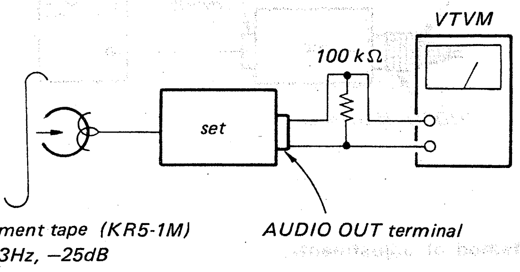
1. ACE Head Adjustment

Refer to the description of mechanical section adjustments.

2. Playback Frequency Characteristics Adjustment

[Connections]

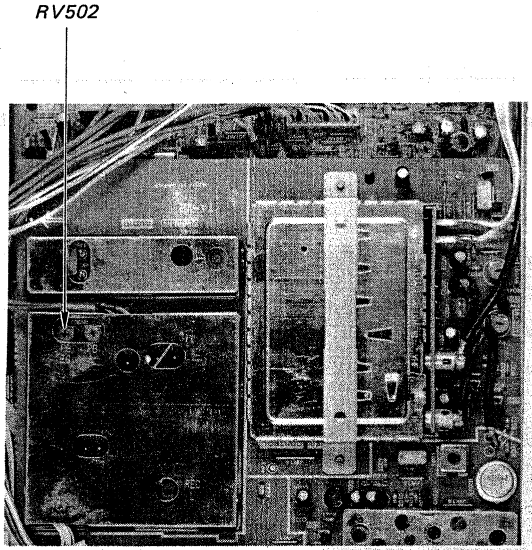
1) Playback



[Method of adjustment]

1) Play the 333 Hz and 5 kHz βII audio signal sections on the alignment tape and measure the respective output levels.
2) Adjust RV502 so that the output level at 5 kHz is within 0 ± 1 dB of the output level at 333 Hz.

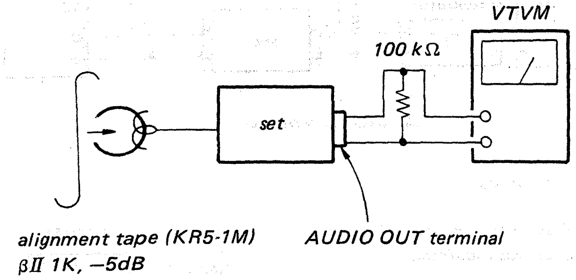
[Adjustment point: audio section (TA-12 board)]



3. Playback Output Level Adjustment

[Connections]

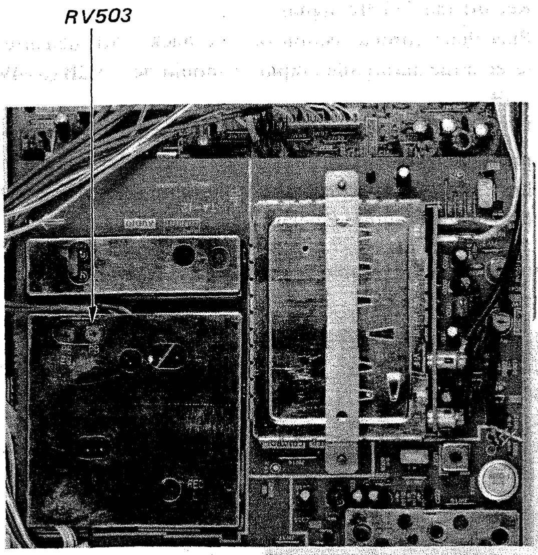
1) Playback


VTVM
100 kΩ
set
alignment tape (KR5-1M)
βII 1K, −5dB
AUDIO OUT terminal

[Method of adjustment]

1) Play the βII 1 kHz audio signal section on the alignment tape and measure the output level.
2) Adjust RV503 until the output level becomes −5 dB (0.44V) $^{+2}_{-4}$ dB.

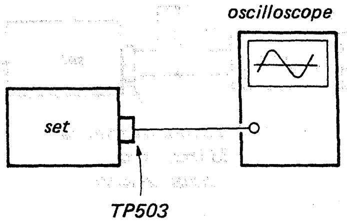
[Adjustment point: audio section (TA-12 board)]



4. Bias Trap Adjustment

[Connections]

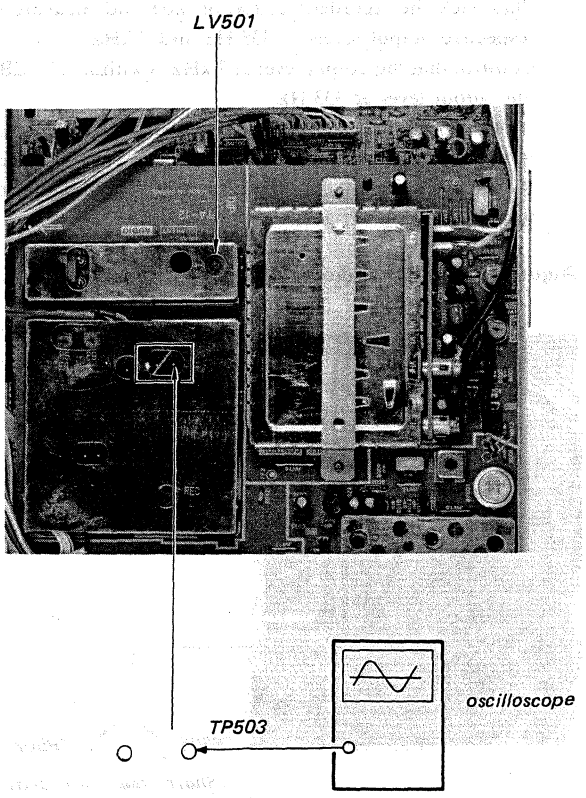
1) Recording


oscilloscope
set
TP503

[Method of adjustment]

1) Put the set in recording mode with no signal input.
2) Adjust LV501 until the amplitude of the bias leak waveform becomes a minimum, 1.2 Vp-p or less.

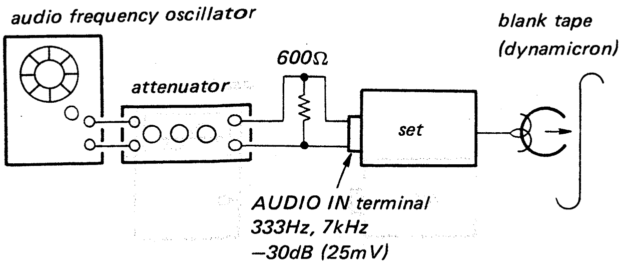
[Adjustment point: audio section (TA-12 board)]


LV501
TP503
oscilloscope

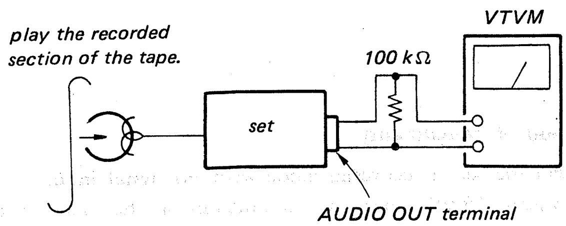
5. Sound Recording Bias Adjustment

[Connections]

1) Recording (βIII mode)


audio frequency oscillator
attenuator
600Ω
set
blank tape (dynamicron)
AUDIO IN terminal
333Hz, 7kHz
−30dB (25mV)

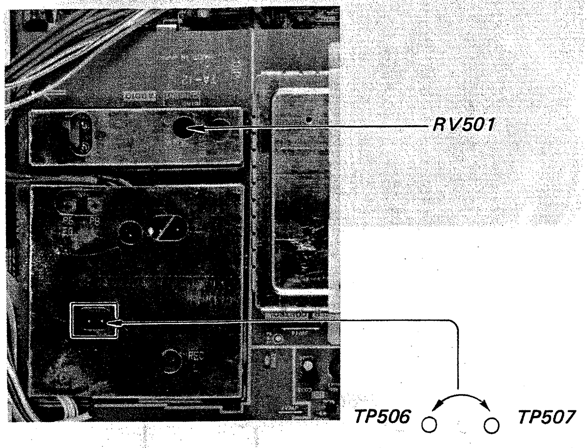
2) Playback


play the recorded section of the tape.
VTVM
100 kΩ
set
AUDIO OUT terminal

[Method of adjustment]

1) Short the two ends of R538 (TP506 and TP507) together to cut the AGC operation OFF.
2) Apply 333 Hz and 7 kHz, −30 dB (25 mV) signals to the audio input terminal and record them in βIII mode.
3) Play back the recorded section of tape and measure the respective output levels at 333 Hz and 7 kHz.
4) Confirm that the output level at 7 kHz is within ±1.5 dB of the output level at 333 Hz.
5) If the condition is step 4) is not satisfied, repeat steps 2) through 4). If the output level at 7 kHz is too high, turn RV501 clockwise. If the output level at 7 kHz is too low, turn RV501 counterclockwise.

[Adjustment point: audio section (TA-12 board)]

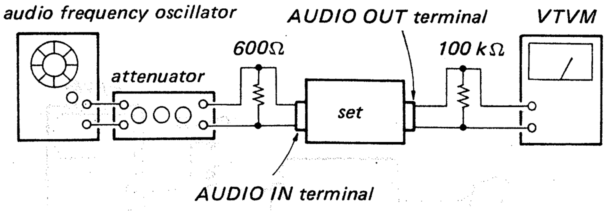

RV501
TP506
TP507

Short the two ends of R538 together to cut the AGC OFF.

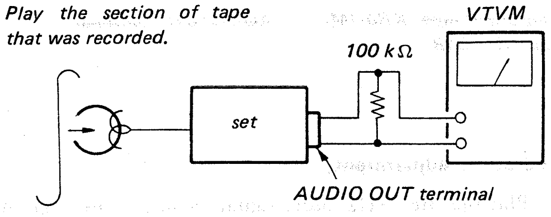
6. Sound Recording Level Adjustment

[Connections]

1) Recording


audio frequency oscillator
AUDIO OUT terminal
VTVM
attenuator
600Ω
100 kΩ
set
AUDIO IN terminal

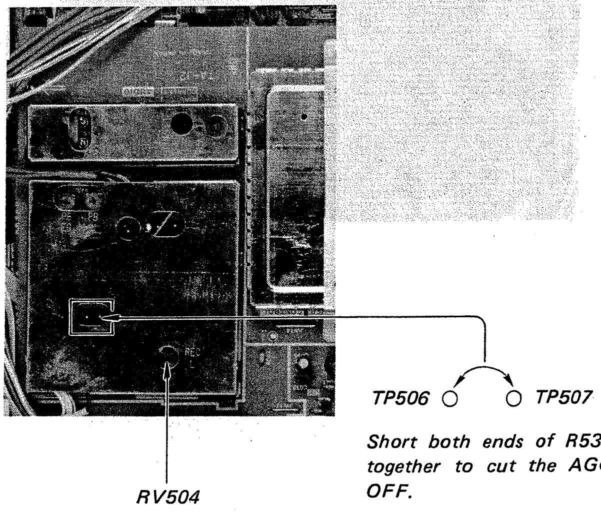
2) Playback


Play the section of tape that was recorded.
VTVM
100 kΩ
set
AUDIO OUT terminal

[Method of adjustment]

1) Short both ends of R538 (TP506 and TP507) together to cut the AGC OFF.
2) Input a 333 Hz signal, and adjust the attenuator so that the output level at the audio line output terminal in E-E mode becomes −5 dB (0.44V).
3) Record the 333 Hz signal.
4) Play the recorded section of tape back, and measure the level at the audio line output. It should be −5 dB (0.44V) ± 1 dB.
5) If the level measured in step 4) is outside of the correct ragne, repeat steps 2) through 4). If the output level is too high, turn RV504 clockwise. If the output level is too low, turn RV504 counterclockwise.

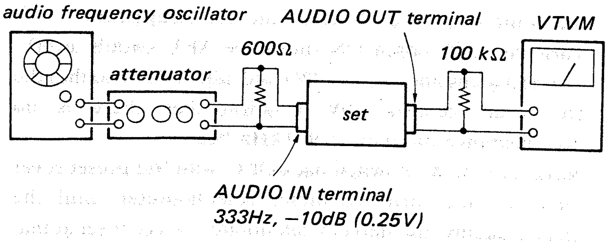
[Adjustment point: audio section (TA-12 board)]


TP506
TP507
RV504

Short both ends of R538 together to cut the AGC OFF.

7. Overall Level Check

[Connections]


audio frequency oscillator
AUDIO OUT terminal
VTVM
600Ω
100 kΩ
attenuator
set
AUDIO IN terminal
333Hz, −10dB (0.25V)

[Method of measurement]

1) Apply a 333 Hz, −10 dB (0.25V) signal to the audio input terminal and record it in βIII mode.
2) Play the recorded section of tape back and measure the output level at the audio line output.
3) Confirm that the output level is −5 dB (0.44V) $^{+2}_{-4}$ dB.

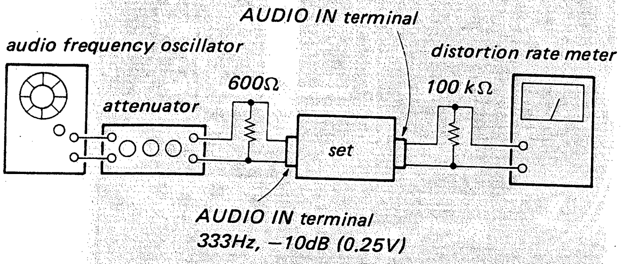
8. Overall Distortion Rate Check

[Condition]

Set the sound quality switch on high.

[Connections]

1) Recording/playback


AUDIO IN terminal
audio frequency oscillator
distortion rate meter
600Ω
100 kΩ
attenuator
set
AUDIO IN terminal
333Hz, −10dB (0.25V)

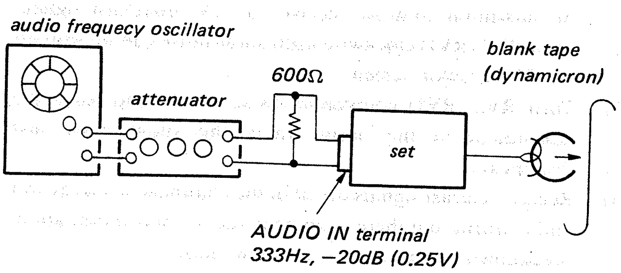
[Method of measurement]

1) Apply a 333 Hz, −10 dB (0.25V) signal to the audio input terminal and record it in βIII mode.
2) Play the recorded section of tape back and measure the distortion rate at the audio line output terminal.
3) Confirm that the distortion rate is 4% or less.

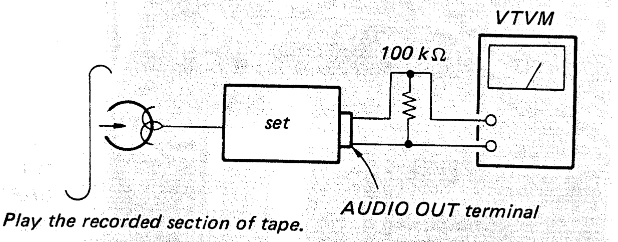
9. Overall Signal-to-noise Ratio Check

[Connections]

1) Recording (βIII mode)


audio frequecy oscillator
blank tape
(dynamicron)
600Ω
attenuator
set
AUDIO IN terminal
333Hz, −20dB (0.25V)

2) Playback


VTVM
100 kΩ
set
Play the recorded section of tape.
AUDIO OUT terminal

[Method of adjustment]

1) Apply a 333 Hz −10 dB (0.25V) signal to the audio input terminal and record it in βIII mode.
2) Next, connect a mini jack to the audio input terminal, leaving the input side of the mini jack open. That is to say, the recording is now done with no input signal.
3) Play the sections of tape recorded in steps 1) and 2) back and measure the respective output levels.
   Confirm that the difference between the signal level obtained from the section recorded in step 1) and the noise level obtained from the section recorded in step 2) is 33 dB or more.

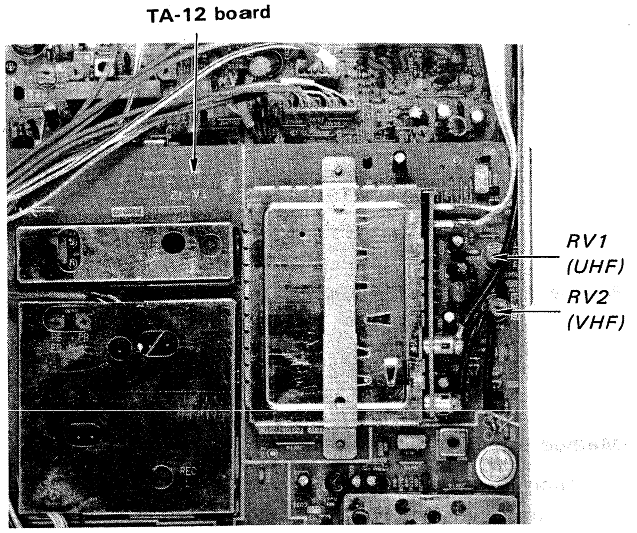
5-6. TUNER BLOCK SYSTEM ADJUSTMENTS

1. Tuner AGC Adjustment

Note:

The UHF adjustment locations are given in parentheses.

1) At maximum contrast, receive any TV broadcast signal.
2) Turn RV2 (RV1) clockwise until snow noise can be seen on the TV monitor screen.
3) Turn RV2 (RV1) counterclockwise slowly and leave the adjustment at the point where the snow noise just disappears.
4) Receive telecast signals on all of the channels in succession and confirm that there is no beat due to corss-modulation, breakdown of the picture or snow noise.



2. AFT Adjustment

1) Receive any TV broadcast signal.
2) Turn the AFT switch OFF (with the preset cover removed).
3) Turn the preset potentiometer until a 920 kHz beat can be seen, then turn it counterclockwise slowly and leave it set at the point where the 920 kHz beat just disappears.
4) Turn the AFT switch ON (press the AFT switch lever).
5) Connect an oscilloscope to TP3 and adjust T004 so that the DC level becomes 5.0V. Confirm that there is no disappearance of color or 920 kHz beat.
6) Next, turn the AFT switch back OFF (with the preset cover removed) and turn the preset potentiometer until the picture quality just starts to deteriorate. Leave it set at that point.
7) Turn the AFT switch ON and OFF repeatedly to check the AFT operation.
8) Return the preset potentiometer to the position where it was set in step 3).